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MODERN PROGRESS AND HISTORY

Addresses on Various Academic Occasions

BY

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TO

HIS EMINENCE

John Cardinal Farley

Archbishop of New York

as a slight token of grateful appreciation for his
fatherly kindness and encouragement and of
cordial homage on the completion of
his first year of Cardinalate

PREFACE

THE title of this book was originally announced as that of the first address it contains, Problems Old and New in Education. As this would produce confusion, however, with the volume of previous addresses, "Education, How Old the New," it seemed better to change to the present title, which is justified by the fact that practically all the addresses published in this volume are in contradiction with the very prevalent impression that what we are doing in this generation is new and that, to a great extent, the problems that we are engaged in solving never presented themselves in the same way to humanity before. The popular idea of progress is that one can measure human advance almost from decade to decade. As a matter of fact, in the great expressions of human intelligence, in literature, above all in poetry, in painting, in sculpture and architecture, we are behind, not ahead of, the past. The ordinary idea of modern progress as representing a great advance in our time over what was accomplished by preceding generations is entirely without justification in history. Human nature has not changed, and to read a classic, no matter how old it may be, is, in James Russell

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Lowell's striking phrase, like reading a commentary on the morning paper. Men have often faced the special problems of humanity that we are occupied with now, and whenever they have taken them seriously in any period of human history, they have solved them about as well as at any other period, even our own.

There are thought to be at least some exceptions to this rule, however. Education is supposed by some to have made wonderful advances, and science is presumed to have its first real era of progress in our time. It only takes a little knowledge of older times in the intellectual life of humanity, however, to obtain emphatic contradictions of such notions. The problems of education that we are most interested in discussing at the present time are all old. Much more of our science was anticipated long ago than we care to admit until the actual evidence is presented to us. Many supposedly new advances in medicine are really quite old. Surgery, anæsthesia, antisepsis, dentistry have all flourished long before our time.

What is true in science is also true as regards social problems. It is comparatively easy to illustrate that the sociological questions of our time have often come up for solution before, and that some of those solutions are well worth studying for the sake of the light they throw on dark phases of present-day problems. Even in pro-

nunciation the old-fashioned Irish brogue is not the new-fangled deterioration of speech that we have been likely to think it, but the preservation of the linguistic mode of Elizabeth's time, during which the Irish were taught English. Being out of the current of English speech variation they retained the original mode of pronunciation so that now, if Shakespeare should come back, his speech would be more nearly represented by the Irish brogue than in any other way. The paper on Pronunciation Old and New finds then an appropriate place here as illustrating the illusions of history.

These addresses on various occasions had for subjects phases of history illustrating anticipations of many things we are likely to think of as modern. They have as a binding link of common interest the relations of the old and the new, hence their publication as a slight contribution to the subject of progress as represented in human history. In the historical period men have always been just what they are at the present time in their interests, their ways of looking at things, their power of expression and their philosophic views of life. The assumption of inevitable progress supposed to be traceable from century to century, if not actually from generation to generation, is entirely without confirmation in actual history. There are cycles of achievement and ups and downs in human accomplishment,

but we are far from being at the present moment at one of the high points of the curve of human advance. I know nothing that would be more chastening in its influence on our generation than a cordial recognition of that fact, nor anything that would be more likely to encourage true scholarship and a proper appreciation of values in the intellectual life.

Modernism, as a term expressing the feeling that we are intellectually so far ahead of our forbears as to be quite beyond what they were content to accept in religion and philosophy, is only one of the amiable self-delusions that a superficial generation may accept for a time, but that it will not take seriously whenever it reviews the origin and comparative value of its own thought and above all appreciates critically the real significance of human achievement.

CONTENTS

CHAPTER		PAGE
I.	PROBLEMS OLD AND NEW IN EDUCATION	3
II.	PRESCRIPTIONS OLD AND NEW	45
III.	DENTISTRY, HOW OLD THE NEW	79
IV.	PRONUNCIATION OLD AND NEW	123
V.	PATRIOTISM OLD AND NEW	157
VI.	MUTUAL AID VS. THE STRUGGLE FOR LIFE	187
VII.	PROFESSIONAL LIFE AND COMMUNITY INTERESTS	225
VIII.	CHRISTIANITY AND CIVILIZATION	255
IX.	THE STORY OF POST-GRADUATE WORK	299
X.	FACTS AND TRUTHS IN EDUCATION	341
XI.	THE WOMEN OF TWO REPUBLICS	381

ILLUSTRATIONS

FIG.		PAGE
1.	THE OLDEST PRESCRIPTION	46
2.	THE OLDEST PRESCRIPTION (REVERSE)	47
3.	PHŒNICIAN DENTURE FOUND AT SIDON (1500 B. C.)	89
4.	ETRUSCAN DENTURE FOR SUPPORTING TWO INSERTED HUMAN TEETH (700 B. C.)	95
5.	ETRUSCAN DENTURE FOR SUPPORTING ONE INSERTED TOOTH	96
6.	PROSTHETIC PIECE OF VERY PECULIAR CONSTRUCTION	99
7.	ETRUSCAN DENTURE FOUND AT VALSIAROSA	100
8.	ROMAN DENTURE (CROWN) FOUND AT SATRICUM	100
9.	THE SAME, SEEN FROM BELOW	100
10.	THE PELICAN (GIOVANNI D'ARCOLI)	116
11.	DENTAL FORCEPS (GIOVANNI D'ARCOLI)	117
12.	THE FORCEPS "STORK BILL" (GIOVANNI D'ARCOLI)	118

PROBLEMS OLD AND NEW IN EDUCATION

"I know that I am treading on tender ground, but I cannot help thinking, that the restless pains we take to cram up every little vacuity of life, by crowding one new thing upon another, rather creates a thirst for novelty than knowledge; and is but a well disguised contrivance to anticipate the keeping us in after life more effectually from conversing with ourselves. The care taken to prevent *ennui* is but a creditable plan for promoting self-ignorance. We run from one occupation to another (I speak of those arts to which little intellect is applied), with a view to lighten the pressure of time; above all, we fly to them to save us from our own thoughts; we fly to them to rescue us from ourselves; whereas, were we thrown a little more on our own hands, we might at last be driven, by way of something to do, to try to get a little more acquainted with our own hearts."

—HANNAH MORE.

PROBLEMS OLD AND NEW IN EDUCATION *

I SUPPOSE that I owe this invitation to address The Schoolmasters' Club, an invitation which I assure you I appreciate very highly, to my venturesome publication of a book with the perhaps somewhat disturbing title, "Education, How Old the New." † As most of you know very well, however, it is not generally conceded or at least is not always certain, that the man who writes a book about education knows much about this subject. Indeed the men who know most about it are likely to know so well how much there is that they do not know about it that almost as a rule they refrain from book making. The experienced pedagogue may very well be so appalled at his knowledge of how much there is to say about education that he hesitates and hesitates "standing in pause where he shall first begin"—and so it happens that the real schoolmaster seldom writes books. If he did, even more than was said 3,000 years ago would we have to say, "of making many books there is no end." Let us be duly thankful for our mercies.

*The material for this address was brought together for one of the monthly dinners of The Schoolmasters' Club of New York and vicinity, at the Hotel St. Denis, April 8, 1911.

†Fordham University Press, New York, 1910.

The matter of the writing of books on education and the possible significance of it reminds me of our experience as to the writing of successful medical articles and some conclusions which, right or wrong, we are apt to accept in the matter. For nearly twenty years I have been a medical editor, and there is an impression in medical editorial offices that seems worth while recalling here. It is that if a man is to write striking medical editorials it is better that he should not practise much. Practice is likely to show him the deficiencies of his theories and as a consequence he does not write so well. He is not so confident about things. Apparently what most of us want to read are confident statements which show us that somebody knows something quite definite about the subject under discussion in medicine, for a good many of us are quite ready to confess quite frankly that we do not know very much about it. Men unspoiled by disillusioning attention to practical medical problems are said to make the best medical editorial writers, and I am very much inclined to think that amateurs, or teachers who have not too many nor too insistent opportunities to exemplify their theories, bring themselves most easily to write about education and write with most confidence —and are read with most satisfaction. Jean Jacques Rousseau is a typical example, but there are many others.

It has occurred to me that possibly there is

another reason besides that book why I should be asked to talk on education to experienced schoolmasters. The Spartans in the old days used to permit even their young folks to see certain examples that were not admirable in themselves, for the purpose of impressing on them the fact that there were some things that ought to be avoided. I can easily understand that the schoolmasters, having listened for many years at these monthly dinners to men who brought them information gleaned from experience in their own departments, might care occasionally to hear from some one who, lacking experience to a great degree, for my years of teaching are few, and rather distant except for educational work in medicine in the last five years,—might care, I say, to hear from some one whose statements would represent what ought to be avoided in the matter of pedagogical theory, the rash intrusions of the *dilettante,* as a foil for the sublimated experiences of the professional in the subject. Personally I am not unwilling that I should, for this once, be the horrible example, if in that way good will be accomplished. The old Romans used to have a skeleton at their feasts to remind their guests to "eat, drink and be merry, for to-morrow you die." I fill the rôle of skeleton rather too well, but I am quite willing to be "it," if necessary.

Since I am here I must somehow occupy you for my allotted period and I hope not all too seriously. I have thought that probably a

discussion of some of the problems of education that you are facing now and that educators have always faced, as they are exemplified at various times in history, might be of interest to you. Personally, as my friends doubtless know all too well, I have a very definite persuasion with regard to what we are pleased to call progress. I find no evidence for progress in the serious forms of expression of man's intelligence and simply refuse to accept the ordinary notions that are entertained in that matter. As is very easy to see, there is no progress in architecture, nor sculpture, nor painting; and as it is borne in upon us with rude emphasis in our time, none in poetry, the drama, or any other phase of literature.

Education is one of these plastic arts the material of which is the young human mind which is to be formed according to the genius of the educator, quite as painter and sculptor and architect and poet and dramatist inform their subjects. With lack of progress so evident in the other arts, for we have no great painters, our artists are merely imitators, our sculptors scarcely if at all better, our literary men, and above all, our poets, far below the writers of past generations, it would indeed be a surprise if education alone among the arts represented a climax of progress in our time. Our nineteenth century poet sang, " we are the heirs of all the ages in the foremost files of time," and it would seem that having the

advantage of what men had accumulated in the past we must be far ahead of them, but just as soon as we analyze our idea of progress in the light of cold facts, we find that progress, so far as the arts are concerned, is an illusion.

It has seemed to me that certain social problems in education with which you as superintendents and principals come in contact very frequently might be of special interest when discussed from their historical aspect as revealed to us in classic literature. I think that this generation is especially prone to assume that its social problems are quite new, due to certain developments of humanity consequent upon our environment and our place in evolution. It takes but little knowledge of old-time social conditions to correct such a notion. Any one familiar with social history is sure to be aware that, over and over again in the past, the race has gone through phases of life that seem peculiar to our own time. This is as true in education as in any of the other social processes of humanity, as is quite easy to demonstrate.

THE MOTHER PROBLEM.—One of the important questions at all times in education has been what may be called the mother problem, that is, how much has mother spoiled her boy by over-indulgence to him and above all by social aspirations for him, keeping him from the ordinary trials and hardnesses of life around him which would build up character. A distinguished edu-

cator in England wrote not long since on the necessity for putting a certain hardness into education if it is to be successful. We all despise the molly-coddle, who has not learned to stand hard things, and it has been particularly emphasized for us here in America in recent years. It is hard for a mother to think that her boy should not be permitted to escape the hardness of life, but if he does he has lost one of the essentials of real education. The condition is not new in education, however. The "mother's darlings" we have always had with us and, like the poor, doubtless we shall always have them. We do not expect much of them—and we are not disappointed.

Then there is the allied influence of the provision of generous spending money for the boy, especially when mother is of better or supposedly better antecedents than father and is afraid that her son will sink to the social level of his father. Under such conditions she makes every effort to supply him with money so that he may associate with those whom she considers her equals, or with the sons of those with whom she aspires to associate. The climbing mother is, of course, even commoner than the climbing father. Some one once said very well that woman is a born aristocrat and she schemes in one way or another to lift up her children and rise with them. This seems a present-day problem, and it is rather hard to think of it as occurring in the same terms in old times. Of course it has developed

at many times in history. Indeed, whenever social conditions have been like our own, that is whenever money has come to mean much and has enabled the new rich to ape and clamber after and hope to rival or at least be recognized by their social superiors, real or supposed, the fond mamma scheming socially for her boy as well as for her girl has always been in evidence.

Aristophanes has a very interesting satiric comedy the beginning of which brings the mother problem, as it existed at Athens, quite clearly before us. The play is "The Clouds," one of the most serious in its satire, the one in which Socrates was held up to public ridicule. Though Aristophanes was a personal friend, there are thoughtful historians who declare that Aristophanes' "Clouds" had much to do with Socrates' death. Since it is in this play that the mother problem is particularly brought out, we can be sure that it probably represents a series of definite truths from observations on the social life of Athens. The father Strepsiades, who was a country gentleman, has a son who is the bane of his existence because of his interest in horses and the debts which he contracts as a consequence. The country gentleman had married a reigning Athenian belle with social aspirations, and while the father is of a farmerly economical bent of mind, the mother is anything but that, and she has indoctrinated her boy with her views, and he is cutting a wide swath in social circles, at

the horse shows and as a member of what would be the equivalent, in Athens, of the Coaching Club and the Kennel Club and the Hunting Club of our cities. In the meantime the old man is kept awake by his son's accumulating debts, which he sees no way to pay. Let me quote the passages that particularly concern our theme of educational problems from Collins' "Aristophanes" in the Ancient Classics for English Readers.

"The opening scene in this comedy is an interior. It represents a room in the house of Strepsiades, a well-to-do citizen, in which he and his son Pheidippides are discovered occupying two pallet beds. The household slaves are supposed to be sleeping in an outer room, the door of which is open. So much of the antecedents of the drama as is required to be known in order to its ready comprehension comes out at once in the soliloquy of the anxious father.

STR. (*yawning in his bed*). O—h!
Great Jove, how terribly long the nights are now!
Interminable! will it never be day, I wonder?
I'm sure I heard the cock crow long ago,
These slaves are snoring still, the rascals. Ah!
It was not so in the old times of peace.
Curse the war, I say, both for other reasons,
And specially that I daren't punish my own slaves.
And there's that hopeful son of mine can sleep
Sound as a top, the whole night long, rolled up
Like a great sausage there, in five thick blankets.
Well—I suppose I'd as well put my head
Under the clothes, and try to get a snooze.

I can't—I can't get to sleep! There are things biting me—
I mean the bills, the stable expenses, and the debts
Run up for me by that precious son of mine.
And he—oh, he lives like a gentleman,
Keeps his fine horses, drives his curricle—
Is dreaming of them now, no doubt—while I lie vexing,
Knowing next month those notes of hand come due,
With interest mounting up. (*Calls to his slave*)
Boy! light a lamp!
Bring me my pocketbook, that I may see
How my accounts stand, and just cast them up.
Slave brings a lamp, and holds it while Strepsiades sits up and looks over his account book.
Let's see, now. First, here is Prasias, fifty pounds.
Now, what's that for? When did I borrow that?
Ah! when I bought that grey. Oh dear, oh dear!
I shall grow grey enough, if this goes on.

PH. (*talking in his sleep*). That's not fair, Philo! keep your own side of the course.

STR. Ay, there he goes! that's what is ruining me;
He always races, even in his dreams.

PH. (*still asleep*). How many times round do the chariots go?

STR. You make your old father's head go round, you do,
But let me see—what stands here next to Prasias?—
Twelve pounds to Amynias,—for a car and wheels.

PH. (*still dreaming*). There,—give that horse a roll and take him home.

STR. You'll roll me out of house and home, young man!
I've judgment debts against me, and the rest of them
Swear they'll proceed.

PH. (*awaking*). Good heavens! my dear father,
What makes you groan and toss so all night long?

STR. There's a sheriff's officer at me—in the bed-clothes.

PH. Lie quiet, sir, do, pray, and let me sleep.

STR. Sleep, if you like, but these debts I can tell you,
Will fall on your own head some day, young man.
Heugh! may those matchmakers come to an evil end
Who drew me into marrying your good mother!
There I was living a quiet life in the country,—
Shaved once a week, maybe wore my old clothes—
Full of my sheep and goats and bees and vineyards,
And I must marry the fine niece of Megacles.
The son of Megacles! an awkward country fellow,
Marry a fine town belle, all airs and graces!
A pretty pair we were to come together—
I smelling of the vineyard and the sheep shearing,
She with her scents, and essences and cosmetics,
And all the deviltries of modern fashion.
Not a bad housekeeper, though—I will say that—
For she kept open house. "Madam," said I,
Showing her one day my old coat with a hole in't,
By way of parable,—"this can't last long."

SLAVE (*examining the lamp, which is going out*). This lamp has got no oil in it.

STR. Deuce take you,
Why did you light that thirsty beast of a lamp?
Come here, and you shall catch it.

SLAVE. Catch it,—why?

STR. (*boxing his ears*). For putting such a thick wick in, to be sure!
Well,—in due time this boy of ours was born
To me and my grand lady. First of all,
We got to loggerheads about his name;
She would have something that had got a horse in it,—
Xantippus—or Charippus—or Philippides;
I was for his grandfather's name, Pheidonides.

Well, for some time we squabbled; then at last
We came to a compromise upon Pheidippides.
This boy—she'd take him in her lap and fondle him,
And say, "Ah! when it grows up to be a man,
It shall drive horses, like its uncle Megacles,
And wear a red cloak, it shall." Then I would say,
" He shall wear a good sheepskin coat, like his own father,
And drive his goats to market from the farm."
But there—he never would listen to me for a moment;
He's had a horse fever always—to my ruin."

How true to life is the picture. Father unconsciously reveals his miserliness, for he is just as much to blame at one extreme as mother at the other. The unsuitable marriage probably with more years separating the spouses than is good for them; the middle-aged country landholder accepted by the city belle because she hoped by means of his money to regain or elevate her social position; the quarrel over the boy's name, for mother would have Reginald or Cyril, and father plain John (in Greek mother wanted a high-sounding name with a horse in it, father wanted him called after *his* father by a name that meant the economical one); all these are quite as actual to-day as at Athens 2,300 years ago. Of course, mother had her way.

Those who might be inclined to think that the educational problems which have been raised by the great increase in modern wealth and the consequent tendency of parents to want to have their children enjoy every advantage, and above all, have the things that they had not, are at all

novel, simply do not know the details of old-time social life. I said before, but it will bear repetition, that whenever we find a period like our own in what concerns things social, then if we only know enough about the intimate life of the people we shall find our problems anticipated and sometimes even their best solutions indicated. It is true that sometimes the problems seem to be in caricature because in some way, while resembling our own closely, they differ markedly, yet they are undoubtedly the outcome of similar conditions. I have illustrated the mother problem for you, now let us turn to the father problem.

THE FATHER PROBLEM.—We all know the self-made man of the modern time with the tendency to worship his Creator, often relieving the Creator of the rest of us of no little obloquy, the man who, having made his own way through hardships of many kinds, is resolved that his boy shall not suffer from any of the needs that he felt when he was younger. Whatever he longed for, but could not have, he wants his boy to have. He looks back on his necessities as handicaps and does not appreciate that they were the means by which he was enabled to bring out all that was best in him, or at least, to make him self-reliant and independent of conditions. After a time he wonders why his boy has none of his own initiative or energy, and why he is satisfied to loll around and do nothing, with the usual con-

sequence of the devil finding work for idle hands. His father has actually prevented him from the education of will and the training of character that he ought to have.

When fathers are determined that their boys, not only shall have every advantage of education, but shall associate with the best that there is in the university, regardless of expense, and, above all, when they select a university for their son, mainly with the idea that the associations with wealthy men's sons or with the nobility, shall serve as aids to the boy in his future life, not only socially, but professionally and commercially, then we can always look for things to happen and they always do happen. I think that most people are rather prone to feel that this sort of thing is limited to our time or at least to comparatively modern times. Cicero's letters, those wonderful revelations of a man and his times that bring the great Roman orator nearer to us than many of our contemporaries, throw a very interesting light on the father problem as it existed at Rome, and it is all the more interesting because it is of Cicero himself that the story all unconsciously is told by himself.

Athens was the great university town to which the young Romans of the late Republican times were sent. The sons of the senators particularly went there and doubtless lived rather exclusively. Probably they objected to associating with sons of men of merely equestrian rank. Cicero, after

all, it must be remembered, was the type of a self-made man and belonged only to that order which, for want of a better name, is called the knights. As we know him from his great orations, however, we should expect him to have a good fund of common sense. This seems to have failed him in the treatment of his son. As he was absent from Rome when his son had to depart for the university, there are letters from the orator to Atticus, who had trusted correspondents and bankers and fiscal agents in many parts of the world. Through his agents at Athens, Cicero asked him to make all necessary financial arrangements for his son's sojourn in the Greek city. One of Cicero's main solicitudes seems to have been that the boy must surely have enough money. Apparently Atticus recognized the dubious benefit this might be, but allowed his better judgment to be overborne by the father's fondness. Probably there was a "Gold Coast" in Athens in the olden times on which the wealthy lived and Cicero wanted to be sure that his boy would be with the best. What the consequence was, I leave to Professor Frank Frost Abbott of Princeton to tell in his chapter on The Career of a Roman Student, in his "Society and Politics in Ancient Rome."* He says:

"To meet the running expenses of his university course, Cicero set apart the rental from

*New York, Scribners', 1909.

a house upon the Aventine and certain shops in the Argiletum. The snug sum which resulted therefrom would seem to have been sufficient for a student of modest tastes, but the tastes of Marcus were evidently not of the modest sort, for he pathetically writes home with regard to his teacher, Bruttius, 'I have hired a place for him nearby, and I help him out in his poverty so far as I can from my own scanty means,' and it was found necessary to eke out the young man's allowance by the payment of additional sums now and then, payments which the prudent Atticus was less willing to make than Cicero. The orator's unwise generosity toward his son was occasioned, not merely by paternal fondness, but also by a hope that through a lavish expenditure of money his son might make himself popular with his fellow-students and gain access to the more exclusive circles of Athenian society, as may be gathered from his letter to Atticus at the moment of his son's departure: 'I shall take care that neither Bibulus nor Acidinus nor Messalla, who I understand will be at Athens, shall have more money to spend than he [Marcus] gets from these rentals.' In this hope, father and son were disappointed. The young Bibulus and Messalla at Athens frowned upon the social aspirations of the younger Marcus, as their fathers at Rome had frowned upon those of the elder [how history repeats itself!], and the only intimate friends of

whom mention is made are the freedman's son Montanus and the renegade rhetorician Gorgias."

We are told further that the father's generosity caused his son's demoralization, for the time being at least, and came near completely undoing him. Marcus seems to have been a pretty good sort of a fellow. The accounts we have of him in the after time in the Civil Wars apparently indicate that he had considerable manliness and character, though his university career came near finishing him. Marcus does not appear to have gotten on very well in educational matters at the university, and after a time returned to Rome, whether by invitation of the university authorities or not we cannot now be sure. One thing he had learned down at Athens which has come again into university curricula. That was to open wine, and he seems to have taken high honors in it. Pliny's story may be an exaggeration when he says that young Cicero, after his return from Athens, could swallow twelve pints of wine at a sitting. There is another tradition that up to this time Mark Antony had the reputation of being able to stand more wine than any one else in Rome. The Romans thoroughly despised the man who was a hard drinker or who took his wine straight, *merum* as they called it, and above all who took strong wine in the morning. Antony was Cicero's enemy, and it will be recalled that, later on, the orator's death

was due to Mark Antony's enmity. Perhaps Cicero the father then took a special pride in the fact that his son as the result of his university experience was able to take away from Mark Antony the reputation, which he is said to have possessed, of being the hardest drinker at Rome in his time—but we doubt it.

THE SEX PROBLEM.—All our problems in education came up in the olden times, even in the very oldest. Man's skull has not changed materially in some 6,000 years; why should his thinking? Some of the anticipations of what seems most modern are very striking. For instance we are devoting much attention at the present time to the sex problem in education. To listen to the expressions of many teachers, and there seems to be a definite tendency for the unmarried woman of uncertain age to be particularly emphatic in the matter, one might well think that the sex problem had never been taken seriously before our time, and that above all no one ever knew enough about it to attempt to solve it properly until our generation. The one bother at the present time is that people are overoccupied with it. The novels that young folks read, and especially that young women read, mainly turn on the sex problem. No play is successful, as a rule, unless it has a sex problem in it. Our newspapers are full of sex crimes, of sex difficulties and of all sorts of suggestions

with regard to sex. It is proposed to teach still more about sex.

Knowledge is supposed to be the saving grace in this matter. There seems to be no use in pointing out that medical students know much more about sex matters and above all about the sexual diseases, the knowledge of which is supposed to be so deterrent, yet it is not they who have the reputation for being the most self-controlled of our university students in sex matters. Our divorce records show that men and women who have been twenty, thirty, yes even forty years married, and from whom there are no secrets in the matter of sex, are still just as likely as the most unknowing to become victims of sexual impulses, unless they control themselves.

In the light of the assumption that now for the first time we are getting to the teaching of sex properly, it is rather amusing to pick up what is probably the oldest book in the world, which happens at the same time to be an old educational text-book, and read the paragraph in which this whole subject of sex is dealt with as completely and yet as chastely, as forcibly and yet as continently, as could possibly be expected at any, even our own enlightened time. The book is the "Instruction" or as it is sometimes called "The Proverbs" of Ptah Hotep, a set of maxims which a father, who was a vizier of King Itosi in the Fifth Dynasty in Egypt,

wrote out for his boy, apparently at the time when the young man was to be married and was to leave his father's house and set up a household for himself. The father was probably a man of somewhere between thirty-five and forty, for they married very young in Egypt, and the boy, I suppose we must call him young man since he was getting married, was probably about seventeen. You can understand how old the father must have seemed to the boy of seventeen, who was graduating from the school of the home and to whom the old gentleman was giving what may be considered, without stretching the metaphor too far, the first address to a graduate of which we have any record.

We might think that what the father has to say over 5,000 years ago would have at most an antiquarian interest, or at least that it would be scarcely more than amusingly commonplace now, but, as I have often said, any father of the modern time would be glad to be able to give such practically valuable advice, and it reveals how much our social problems were anticipated in old Egypt. He gives him all the rules of the road, as John Boyle O'Reilly called them, that we would like to emphasize for the young man: not to be conceited of his knowledge, not to argue, not to be a tale-bearer, not to be covetous,—for covetousness particularly makes trouble between relatives-in-law; not to be easy to anger, not to be idle, for God [and God is always in the sin-

gular] confers benefits on those who labor for them; not to be morose, for a smiling countenance brings friends, and to live in the house of kindliness, for then men come to give gifts of themselves. He tells him how to treat his wife. Practically what he says is that his wife is as important to any man as his business or his estate; pay as much attention to her as you do to your estate, and all will be well. He then has some advice for him on the servant problem. That at least seems one of the social problems the development of which was reserved for our time, but Ptah Hotep's advice shows that it must have been reasonably acute in old Egypt. He must not treat his servants too well, for when they are given gifts they say "We go." He must not treat them ill, for that is unjust, and their treatment is a difficult matter, but justice is the most important solution of the problem. The more one reads the little book, the more one realizes how wise the old prime minister was.

A little bit later, then, there come quite naturally in the midst of this advice his words of wisdom with regard to the sex problem. It is not unduly emphasized so as to make it contrariwise suggestive, yet all of its significance for life and happiness is pointed out. He tells him very frankly that nothing is so dangerous as unlawful yielding to sex impulses and nothing so ruins life. He hints that "death is reached thereby," and one wonders whether his reference is entirely

to the danger from an irate husband, or whether he did not have some hint of the diseases that may develop. Above all, he pictures to him in a few emphatic words that the man who permits himself to lose his self-control in this matter goes farther and farther until finally law will not hold him and he is avoided by those who know him. Lest it should seem that I may be making the expressions more modern than they really are, I prefer to quote Ptah Hotep's own words as they are found in the translation made by Battiscombe Gunn, readily available in the little volumes of "The Wisdom of the East Series," published by Dutton. After I have read it I shall ask you to think whether there is anything more than this that can be said and whether we have in any way added to the force of the advice in the 5,500 years, or very nearly that, which have elapsed since the dear old vizier, using old in the sense in which his boy used it, sat down and with loving wisdom and profound fatherly care wrote out his experience for his boy.

"If thou desire," he said, "to continue friendship in any abode wherein thou enterest, be it as master, as brother, or as friend; wheresoever thou goest, beware of consorting with women. No place prospereth wherein that is done. Nor is it prudent to take part in it; a thousand men have been ruined for the pleasure of a little time short as a dream. Even death is reached thereby; it is a wretched thing. As for the evil liver, one

leaveth him for what he doeth, he is avoided. If his desires be not gratified, he regardeth (?) no laws."

VOCATIONAL TRAINING.—We are in the midst of much talk in educational circles about vocational training. Occasionally one hears that that, too, represents an ideal practical development of modern evolution in these enterprising days. Vocational education of course has been the basis of most systems of education in the past. Any one who knows the fine decorations, the jewelry and the metal work from the Egyptian tombs, or has seen the results of the excavations in Etruria, will recognize at once that there must have been fine training of hand and eye and the artistic sense in these old nations. Only training from very early youth could have given the adeptness necessary for such fine achievement.

Plato of course, as in nearly everything else in education, has stated by anticipation the principles of vocational training very well. It would be well for those who are interested in the matter to know that statement. He said:—

"According to my view he who would be good at anything must practise that thing from his youth upwards, both in sport and earnest, in the particular way which the work requires: for example, he who is to be a good builder, should play at building children's houses; and he who is to be a good husbandman at tilling the ground; those who have the care of their education should

provide them when young with mimic tools. And they should learn beforehand the knowledge which they will afterwards require for their art. For example, the future carpenters should learn to measure or apply the line in play; and the future warrior should learn riding or some other exercise for amusement, and the teacher should endeavor to direct the children's inclinations and pleasures by the help of amusements to their final aim in life. The sum of education is right training in the nursery. The soul of the child in his play should be trained to that sort of excellence in which, when he grows up to manhood, he will have to be perfected. Do you agree with me thus far?"

In an address on "Ideal Popular Education," some years ago * I called attention to the magnificent way in which vocational training was developed in the Middle Ages. While there were probably as many students in proportion to the population at the universities of England during the thirteenth century as there are at our institutions of the higher learning to our population at the present time, what is particularly interesting about their system of education is the technical training given those who showed any ability for it. Some twenty great cathedrals, decorated with marvellous skill, were erected in England in a single century. Towns

* "Education, How Old the New," Fordham University Press, New York.

of from 10,000 to 20,000 people built these cathedrals and supplied all the workmen for them. The towns were building in rivalry as a rule and did not apply to one another for help. The workmen invented the various methods of stained glass and trained the artists who made the designs for it. They carved the beautiful wood-work, they hammered out some of the finest iron-work that has ever been made, they worked the precious metals into beautiful forms, they invented and perfected the most wonderful needle-work that the world has ever known, they made beautiful illuminated books and finished their paintings, their sculptures and all the decorations so that often they are the despair of the modern time. They must have had the finest technical schools that were ever known, though they did not call them by our ambitious modern name. They organized a system of apprenticeship that supplied them with the artist artisans that we, with our more elaborate education, often look for in vain.

FEMININE EDUCATION.—The problem of feminine education often seems to those of the present generation to be quite new. There seems to be a general feeling in the minds of many people that in the course of evolution we have, as it were, at last come to a time when men themselves have developed sufficiently to recognize that women have an intellect and also a right to its development. The recognition is as yet imperfect, but it rep-

resents the culmination of human evolution. Nothing could well be so amusing as any such point of view, for after all it is rather easy to appreciate from literature that most imaginative literature has been made for women rather than men. The love poems of Egypt, of China, of India, the great dramatic literature of Greece together with its love poetry, all point to an audience of educated women. They may not have had much information, but they must have had abundant development of intellect.

Plato, of course, in his " Republic " insisted that women should have the same sort of education as men. His reasoning on the subject is well known and, of course, has often been referred to in modern times. He said, " and if I am right nothing can be more foolish than our modern fashion of training men and women differently, whereby one-half of the power of the city is lost—for reflect—if women are not to have the education of men some other must be found for them, and what other can we propose? "

He thought also that women should be given opportunities to develop their bodies by exercise and gymnastics of various kinds, for his ideal was a healthy mind in a healthy body. He realized how much influence the mother had in the education of the child and insisted, as we have already quoted, " that the sum of education is right training in the nursery."

The anticipations of feminine education in the

Middle Ages are particularly interesting. In the first university of modern times, founded at Salerno, though the largest influence in the foundation was exercised by the Benedictines, whose great Abbey of Monte Cassino was not far away, women were given excellent opportunities, not only for study, but also for teaching. This oldest university was founded around a medical school, in which the department of women's diseases was handed over entirely to women professors. Women seem to have been given ample opportunities, not only for the learning of medicine, but also for its practice, and we have a number of licenses granted to women physicians in the neighborhood of Naples. The lady professors in the medical school wrote textbooks on medicine, some of which have come down to us, and married their colleagues of the medical department, and raised their children, many of whom became physicians.

When the University of Bologna was founded around a law school at the end of the twelfth century, Irneria, the daughter of the great law professor, Irnerius, who was at the head of the school, studied under her father, and subsequently became a teacher in the university. We have the names of a number of women professors in the University of Bologna during the thirteenth and fourteenth centuries. Besides law, which is surprising enough to modern ideas at least, as the specialty of a feminine professor, the de-

partments of mathematics and anatomy also, had, according to tradition, women teachers. As a consequence of the tradition thus established, there is not a century since the thirteenth in which there have not been some distinguished women professors at the Italian universities. There seems to have been no objection on principle to either their studying or teaching, though there was considerable family opposition as a rule which had to be overcome. This was probably no more, however, as a rule than the young man meets with who wants to take up painting or poetry as an avocation in life when his father wants him to study law or sell beans. It required a certain amount of character and persistence to secure the opportunity to study, just as it does for the poet or artist, but not more than is necessary to make it clear that the vocation is real and not a caprice.

There seems to have been no opportunity for feminine education provided in the Western universities, and the reason is not difficult to understand. In the twelfth century apparently the entering wedge for feminine education came when Héloïse became the private student of Abélard. The unfortunate outcome of that relation, however, absolutely set back all opportunities for feminine education at Paris. All of the Western universities, especially those of France itself and Spain and England, were greatly influenced by the traditions of the Uni-

versity of Paris; indeed, as a rule, they were founded by professors and students from there, so that their attitude towards women can be understood. Somehow the Italian tradition failed to have any influence beyond the Alps. This is all the more surprising because, ordinarily, it is assumed that ecclesiastical influence has always been opposed to feminine education because of the fear that intellectual development would interfere with piety, yet it was where ecclesiastical power in matters educational was strongest that feminine education obtained its opportunities in the Middle Ages. The initial step, as I have said, came at Salerno, where Benedictine influence was very powerful, if not actually dominant.

In Italy, however, the religious orders of women, and especially the Benedictines, had prepared the minds of Churchmen for the provision of opportunities for feminine education. It has been the custom to think that there was very little intellectual life among the convents of the Middle Ages, but more careful study of even the scanty relics that we have of their chronicles and the writings of the members tell a very different story. We have plays written in Latin, by a nun of the tenth century. She wrote in imitation of Terence and with the idea of providing reading for those who might be influenced for evil by Terence's works while she thought that her Christian stories, told in dramatic form,

might make for edification. The works of St. Hildegarde, born in the next century, show us that women were looked up to as advisers by all the great men of these times, and her letters show that she was consulted by kings and emperors and popes and cardinals and archbishops and heads of religious orders, as well as by governors of provinces and the men generally in her time who were the active doers of great things. Evidently women who had the intellectual ability to make their influence felt beyond their family sphere were able to secure abundant opportunities for the exercise of that influence and have left us works which show thoroughgoing feminine education and intellectual development. Feminine education is as old as any other of the *modern* phases of education that we may care to discuss.

WHAT IS EDUCATION?—Take a really great teacher and see how clearly he appreciates our present-day difficulties. James Russell Lowell said that to read a classic is like reading a commentary in the morning paper. An educational classic is often a comment on the last discussion at an educational meeting.

One of the great teachers at Athens, in the days when Athens was leading the world in architecture, in art, in literature, in dramatics, but also in politics and in martial achievement, was Isokrates. He was a teacher of rhetoric, that is, as he would have said himself, of the

art of speaking forcibly so as to carry conviction. He realized very well, however, that for this he needed to educate, not alone the faculty of speech, but the whole man. Accordingly he labored to produce what we know as the gentleman, by that term not signifying the man who does not soil his hands with labor, for there is many an idle rich man who is no gentleman and cannot be, and many a sooty-handed workman who is a gentleman in the best sense of the word. I am accustomed to say that the definition of a saint and a hero and a gentleman is all the same. In essence the three are one. He is a man who thinks first of others and how his actions will affect them and only after that of himself. Isokrates believed that proper training at school might help to make such men, and so he has given us a definition of the educated man. He said in his "Panathenaikos," a famous speech on education:

"This is my definition of the educated man: First, he is capable of dealing with the ordinary events of life, by possessing a happy sense of fitness and a faculty of usually hitting upon the right course of action.

"Secondly, his behavior in society is always correct and proper. If he is thrown with offensive or disagreeable company, he can meet it with easy good temper; and he treats every one with the utmost tact and gentleness.

"Thirdly, he always has the mastery over his

pleasures, and does not give way unduly under misfortune and pain, but behaves in such cases with manliness and worthily of the nature which has been given to us.

"Fourthly (the most important point), he is not spoilt or puffed up, nor is his head turned by success, but he continues throughout to behave like a wise man, taking less pleasure in the good things which chance has given him at birth than in the products of his own talents and intelligence.

"Those whose soul is well tuned to play its part in all these ways, those I call wise and perfect men, and declare to possess all the virtues; those I regard as truly educated."

President Hibben, in his inaugural address as President of Princeton University, said, "Make a man and he will find his work." What a commentary Isokrates' expressions form on that sentence.

THE PROBLEM OF CONDUCT.—Any of the other problems of education that you think for a moment are modern just look them up, even a little, in the classics of Greece or Rome or Egypt, and you will find that they were problems for them, too. They have been problems for every thinking generation of men who took education seriously, and they will be problems apparently for every generation of men until the end of time. We do not solve problems absolutely, but only for the moment, and there is

always something in our solutions that works out a reaction and leaves men to do the work over again a little later. Take the case of conduct, with regard to which we have been much occupied lately. We hear many complaints in the modern time of the lack of good manners, and also of good morals, among children and growing young folks. Mr. Kenneth J. Freeman, whose untimely death was one of the losses of scholarship to our generation, in his "Schools of Hellas," sums up what Aristophanes has to say with regard to this and related problems in his satires. He says:

"While being taught by the paidotribes, too, they behaved modestly and did not spend their time ogling their admirers. 'At meals children were not allowed to grab up the dainties or giggle or cross their feet.' 'This was the education which produced the heroes of Marathon. . . . This taught the boys to avoid the Agora, keep away from the baths, be ashamed at what is disgraceful, be courteous to elders, honor their parents and be an impersonation of modesty—instead of running after ballet-girls. They passed their days in the gymnasia, keeping their bodies in good condition, not mouthing quibbles in the Agora. Each spent his time with some well-mannered lad of his own age, running races in the Akademeia under the sacred olives, amid a fragrance of smilax and white poplar, rejoicing in the Spring-tide when plane tree and elm

whisper together.' All the voices of generations of boys, bound down to indoor studies when wood and field and river are calling them, the complaint of ages of fevered hurry and bustle, looking back with regret on the days of 'leisure' and 'springtime,' seem to echo in Aristophanes' lament for the ways that were no more.

"'This education,' he goes on, 'produced a good chest, sound complexion, broad shoulders, small tongue; the new style produces pale faces, small shoulders, narrow chest, and long tongue, and makes the boy confuse honor with dishonor: it fills the baths, empties the palaistra.'"

Mr. Freeman has gathered together a number of other references on this important subject. As he has summed it up well, I prefer to quote what he has to say rather than try to say it in my own words less aptly.

"The counts of the indictment are luxury, bad manners, contempt for authority, disrespect to elders, and a love for chatter in place of exercise. The old régime had strictly forbidden luxury. Warm baths had been regarded as unmanly, and were even coupled with drunkenness by Hermippos. The boys had only worn a single garment, the sleeveless chiton, a custom which survived till late times in Sparta and Crete; but at Athens they began to wear the ἱμάτιον or overcoat, as well. Xenophon, blaming parents 'In the rest of Hellas' (i.e., elsewhere than in Sparta), says, 'They make their boy's feet soft

by giving him shoes, and pamper his body with changes of clothes; they also allow him as much food as his stomach can contain.' Children began to be the tyrants, not the slaves of their households. They no longer rose from a seat when an elder entered the room; they contradicted their parents, chattered before company, gobbled up the dainties at table, and committed various offences against Hellenic tastes, such as crossing their legs. They tyrannized over the paidagogi and schoolmasters. Alkibiades even smacked a literature-master. A similar change came over the position of children in England during the latter half of the nineteenth century. If Maria Edgeworth could have met a modern child, she would have uttered quite Aristophanic diatribes against the decay of good manners."

About the same time that Aristophanes was bewailing the deterioration of conduct, Isocrates the rhetorician, whose fine exposition of the true meaning of education I have just quoted for you, has something to say about the same problems. He is somewhat prejudiced by his dream of restoring the Areiopagos to its old power, but he is an educational expert and his evidence is supported by that of many others. "In the days when the Areiopagos had the superintendence of morals, the young did not spend their time in the gambling dens, and with flute-girls and company of that sort, as they do now, but they remained true to the manner of life which

was laid down for them. . . . They avoided the Agora so much, that, if ever they were compelled to pass through it, they did so with obvious modesty and self-control. To contradict or insult an elder was at that time considered a worse offence than ill-treatment of parents is considered now. To eat or drink in a tavern was a thing that not even a self-respecting servant would think of doing then; for they practised good manners, no vulgarity."

A modern would almost have to be persuaded that some one had not tampered with the old text of Isocrates in order to make it apply so aptly to our present-day conditions. Old men are sure that things were not so when they were young, yet here is evidence of the existence, in Athens nearly 2,500 years ago, of some of the educational evils we must decry.

Plato seems almost to have foreseen what would happen when a spirit of independence such as is rife among us pervaded a people. He has foretold exactly what happened under such circumstances when children are given too much independence and the so-called spirit of liberty is fostered. Some one said not long ago, "There is just as much obedience as ever in the American family—only now the parents obey the children instead of the children obeying the parents." Here is what Plato, in the "Republic," has to say on the subject:

"In a democratic state the schoolmaster is

afraid of his pupils and flatters them, and the pupils despise both schoolmaster and paidagogos. The young expect the same treatment as the old, and contradict them and quarrel with them. In fact, seniors have to flatter their juniors, in order not to be thought morose old dotards." *

We are likely to think that the acuter stage at least of the lack of respect for the old and a fitting attitude of obedience towards parents is of comparatively recent development in the modern time. We should be particularly likely to think that with regard to daughters and the general attitude of young women toward their elders a certain lack of respect that has been noted is of very recent origin. Hannah More noted it in her time, however, and expressed her disapproval of it in a passage in her "Strictures on the Modern (!) System of Female Education with a View of the Principles and Conduct Prevalent Among Women of Rank and Fortune," which was originally published in 1799. This passage is all the more interesting because the distinguished authoress anticipated many de-

* Sometime I hope to point out that many of our educational evils have been brought on us by what may, it seems to me, be aptly termed the abdication of the faculty of our American teaching institutions. Athletics was yielded to, the elective system taken up, club life allowed to usurp authority, experimental courses and teaching methods replaced definite modes of instruction, and interest instead of discipline became the watchword of our education. Information took the place of education, and the well-informed man, often deserving the adjective knowing rather than scholarly, became the ideal. Hence the degeneration of our scholarship.

velopments that have actually come, whether for good or for ill, in later times. We have reached the discussion of the rights of youth, the rights of children, the rights of babies. She would probably have said that we hear entirely too little about the duties of immature humanity and that it is the contemplation of duties that develops character, while the dwelling on rights makes for conceit and failure to recognize the rights of others. I quote the paragraph because of its value as a commentary on the history of education during the hundred years that followed its writing. Miss More said:

"Among the real improvements of modern times, and they are not a few, it is to be feared that the growth of filial obedience cannot be included. Who can forbear observing, and regretting in a variety of instances, that not only sons but daughters have adopted something of that spirit of independence, and disdain of control, which characterize the times? And is it not too generally obvious that domestic manners are not slightly tinctured with the prevailing hue of public principles? The *rights of man* have been discussed, till we are somewhat wearied with the discussion. To these have been opposed, as the next stage in the progress of illumination, and with more presumption than prudence, the *rights of woman.* It follows according to the natural progression of human things, that the next influx of that irradiation which our enlighteners are

pouring in upon us will illuminate the world with grave descants on the *rights of youth,* the *rights of children,* the *rights of babies!"* Hannah should have lived to our day to see to what an extent her prophetic spirit was right. It would be interesting to read what she would say about our developments along some of these lines.

Some of the schoolmasters of the modern time have been inclined to think that the reason why children have lost their courtesy and their manners, to some extent at least, and that respect for the old which used to be so characteristic of children, is that corporal punishment has gone out and that, as a consequence, certain of the rougher children give bad example in these matters and example is so much more potent for the young mind than precept that manners have degenerated. Ordinarily it is presumed that this is the first time that this problem of corporal punishment and the right and wrong of it has come up. As a matter of fact we find it discussed rather freely at a number of times in history. Whenever families have been small, and especially whenever they have consisted of but one or two children, there has always been a tendency to forbid corporal punishment. When families are large the need for it seems to be much better seen, and perhaps the good effect of the punishment which the growing youngsters inflict on each other during that precious part of education that comes in a family of six or more

children also influences conclusions in the matter. Certain poetic souls of gentle make-up have always deprecated the use of the rod. In the thirteenth century Walter von der Vogelweide sang:

> "Children with rod ruling—
> 'Tis the worst of schooling.
> Who is honor made to know,
> To him a word seems as a blow."

In a word, one needs only recall phases of old-time education as they have been preserved for us, not in formal books on education, but in the classical literatures, to realize that the problems which we are likely to think of as representing recent developments consequent upon modern social evolution are only repetitions of previous phases of education due to similar social conditions. That is why history is valuable, because it shows us what men did before under circumstances not unlike our own. Literature continues to have a value and interest because men and women are unchanging. The old Greeks, the old Hebrews, the old Egyptians were brothers and sisters of the most modern nationalities, hence the literatures which we have from these peoples continue to have, not alone an antiquarian, but a vital interest. They show us that educational problems are not new, but are as old as the race. Man does not change and his aspirations, his trials, his difficulties, remain the same so far as social conditions permit. I have thought that the

modern pedagogue could have no better set of thoughts brought before him than those which illustrate this essential unchangingness of the nature of man and the value, therefore, of previous experiences in the solution of our present problems.

The idea of evolution has occupied so much attention within the last half century that we have been sometimes prone to forget that man does not change. We are only on the threshold of knowledge with regard to evolution, as so many of our great biologists of recent years have assured us, but as is clear from literature, philosophy and history we can trace no evolution in man. The period of history during which we know him may be entirely too brief to represent any evolution, but the popular notion is that one can almost see the progress from decade to decade and surely from century to century. What we see is the occasional upward swing of the pendulum of human achievement, but so far in history this has always been followed by a downward swing that has brought men back to a previous level. There are some who say that each successive high point of the pendulum's swing is higher than its predecessor. For that there is no evidence as yet. Education, therefore, and educational problems eminently deserve to be studied in their previous phases, for surely they will be helpful for present-day difficulties.

PRESCRIPTIONS OLD AND NEW

"*Non eadem ratio est, sentire et demere morbos.*
Sensus inest cunctis; tollitur arte malum."

—OVID.

[The art of perceiving diseases and of removing them is not the same; perception exists in all: but it is by skill alone that diseases are cured.]

"*Temporis ars medicina fere est.*"

—OVID.

[Time is generally the best doctor.]

PRESCRIPTIONS OLD AND NEW *

WHEN your committee suggested, scant two weeks ago, that I should write something about some curiosities of prescription writing for this joint meeting of physicians and druggists, I could only say that I should be glad to try to put in shape some material that had been used in a lecture on prescriptions old and new, in the course on the history of medicine at Fordham University School of Medicine, and I shall present this to those more familiar with prescriptions in the hope that it will prove as interesting as it seemed to be to the students.

My one idea in it will be to take illustrations from a number of different periods so as to show points of similarity and difference in prescription writing down the ages. I think that you will be able to readily note, in them all, a certain community of interest. In spite of the almost universal persuasion of our time as to constant hu-

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man progress founded on evolution, humanity as we know it in history does not show any marked differences, even though separated by thousands of miles and thousands of years.

I suppose that in any account of prescriptions

FIG. 1.—The oldest prescription in existence, exact size, obverse.

old and new it is well to begin at the beginning. We have what is very probably one of the oldest prescriptions in the world in New York. It is at the Metropolitan Museum in the Egyptological Department. It happened that some three

years ago Mr. Max Müller, who is well known for his researches in Egyptology, was going over some of the smaller objects among the curiosities at our museum when he discovered that one of the small stones with an inscription on it was a prescription the date of which was probably not far distant from that of the Ebers papyrus. He

FIG. 2.—The oldest prescription in existence, reverse.

published a description of it in the *Recueil de travaux archéologiques,* the journal in which people who are interested in that sort of thing would be likely to see it. Recently, Professor von Oefele, very probably the best known of our

medical authorities in this generation on old-time medical history, and whose work both on Egyptian medicine and especially in cuneiform medical literature has given him a place in the front rank of medical historians, called my attention to it and I published a little description of it in an editorial in the *Journal of the American Medical Association.*

Photographs of the two sides of the stone are here presented. They are the exact size of the stone itself, which is roughly three by four inches in dimensions. On one side the inscription runs lengthwise on the stone, but on the reverse it runs crosswise. The writer was apparently not so careful to keep his lines parallel with the edge of the stone on the back. The museum authorities in photographing it have made both sides run apparently the same way. The Egyptian writer, however, turned the stone over, somewhat as many ladies do in their correspondence, and wrote in a direction at right angles to the previous writing. It is rather interesting to find so old an example of this style of writing on the reverse page, for it is sometimes considered, I understand, to be one of the very latest things in fashionable correspondence. The writing was evidently done with a brush; pens with a nib, as we have them, were not invented until about a century before Christ. The material used for ink must have been some very pure form of carbon, for, as you can see even

from the photograph, the marks made are still very clear and are obliterated only near the edge of the stone. The stone itself is in very good preservation. Some fragmentation near the edges there has been, but that is no more than would be expected after 3,500 years, for the inscription is probably very nearly if not quite that old.

The writing itself is the old cursive or hieratic writing which had developed among the Egyptians, after hieroglyphic writing had long been in use, in order to make continuous writing comparatively easy. The contents of the prescription are interesting from many standpoints and while very old have many reminders of what is modern. First, as Professor von Oefele informs me, many abbreviations ordinarily employed in prescription writing at that time do not occur in this, apparently because it was a copy of the prescription made to be carried a long distance and the abbreviations were written out. This is what the druggist does in the modern time very often when a copy of a prescription is asked of him, for he wants to be sure that there will be no misunderstanding. The prescription is for a remedy that was to be used for a fumigation. Fumigations were very commonly employed in the old time and for many affections. It always makes a very impressive way of administering a remedy. Apparently this was meant for a woman patient and one form of precious green

stone was prescribed which was to be ground up and then, by means of some inflammable material, made to burn with the production of smoke which was supposed at least to produce the medicinal effect upon the patient.

The ailment for which this was to be administered was probably one of the functional nervous diseases or so-called hysterias. The old Egyptians spoke of two forms of dislocation of the uterus. The one was downward and is our familiar prolapse of the uterus. The other was upward and the principal symptom of it was the ball in the throat. Not that the Egyptians thought that the uterus was dislocated into the throat, but that in its dislocation upward from the pelvis it crowded other organs and so produced the familiar sensation in the throat. We may be a little amused at this bit of pathology and ætiology, but we must not forget that our very word hysteria, derived from the Greek word for uterus, indicates that for many centuries, down even to our own time, most of the hysterical manifestations were supposed to be connected in some way with the uterus or at least to have their origin in some affection of the genital organs of women. For this hysterical manifestation, attributed to dislocation of the uterus, the Egyptians used fumigations with excellent success. Precious stones were a common ingredient of the prescription. Green precious stones for some reason not well understood now were considered

to be almost a specific for these functional neurotic symptoms as we think of them, but, as they thought, symptoms connected with the dislocation of the uterus.

Three different kinds of green precious stones were used, according to Professor von Oefele. For the wealthy an expensive green stone, probably our emerald; for the middle class a less precious stone, probably some form of chrysoprase; for the poor ordinary malachite. After all, even down to our own time, the neurotic symptoms of the wealthy can seldom be cured by the remedies that seem to do other people good and we have to use those that have a special appeal for some reason, and, above all, that are more costly than the commonplace drug materials which suffice to cure the ordinary common people. Humanity has not changed much in all these thirty-five hundred years since the prescription was written.

Lest this use of green stones might indicate a paucity of therapeutic materials, or a restricted remedial armamentarium, it may be as well to remind you that at the time when this prescription was written the Ebers papyrus represented the principal text-book of medicine and, above all, therapeutics among the Egyptians. In that papyrus there are altogether some seven hundred different substances mentioned to be employed as remedies. There were materials drawn from the animal, the vegetable, and the mineral king-

doms, and quite as diverse as our own pharmacopœia. The diseases for which they were employed were also as various as our own and every class of drugs of the modern time was represented. They had not less than forty different classes of drugs and administered them in every form that we do at the present time, laying great stress even on elegant prescribing.

It so happened that, while looking up some curiosities of prescription writing in the interval between this earliest one in Egypt and our own time, I came across a paragraph in Friedländer's "Roman Life and Manners" that is of interest in this matter. It runs as follows, and shows that the idea of the more costly drugs being more effective for those who could afford to pay for them has been abroad at many times in the history of medicine.

"As the opinion obtained that the dearest stuffs were the most efficacious, and the rich, therefore, would have nothing cheap, his apothecary's business was extremely profitable to the practitioner. One rich man, whose slave Galen had cured of a dangerous tumor, asked for the recipe, saw that its ingredients were cheap, and demanded something 'not fit for beggars.' Galen taught him a more expensive one, and he then experimented on free men and slaves, and acknowledged his indebtedness to Galen for his great success. Of the two kinds of storax Galen recommended the commoner and cheaper as a

rule, and the rarer for emperors and the plutocrats among patients."

It is sometimes the custom to think that the physicians of olden time prescribed only drugs of various kinds and did not give many directions as to the way people should live and their diet, food and habits as regard air and exercise. These are supposed to be developments of modern time. Nothing could well be less true than this. The prescriptions, of the Greeks particularly, often concern much more the natural means of cure than the pharmaceutical remedies. Galen is often thought of, because he lived at Rome, rather as a Roman than a Greek. He was the last, however, of the great Greek physicians, and his works were all written in Greek. While there is no complete edition in a modern language, there are excellent Latin translations. Galen's discussion of the treatment of tuberculosis is the best example that I can give of prescribing apart from drugs in the olden time. He insisted that these patients needed, above all, air and nutrition. They should practically live in the air. It was extremely important that they should not take exercise while suffering from the worst forms of the disease. He thought that milk and eggs were the best kind of nutriment for them. Apparently he did not think much of the drug treatment of the disease.

All this is so modern that it would seem al-

most impossible. My own reading of Galen was not very extensive, though I had come across some passages that indicated this state of mind on his part, but my brother in Philadelphia, who has made special studies in Galen, even to the extent of going to Pergamos to visit his birthplace, and who, because of special interest in tuberculosis, has looked up every reference to phthisis in Galen's works, tells me that there is no doubt that this was Galen's opinion in the maturity of his powers. The great Greek physician complained that many tuberculosis patients were deceived by people who recommended cures of various kinds to them and who disturbed their digestion by many forms of remedies that did not do any good. He says very clearly that the reason why these recommendations were made was that the charlatans wanted to make money out of the patient. His discussion of the question indeed reveals the state of affairs at Rome so similar to that with which we are familiar at the present time as to be quite startling to most people. Personally, I have got over being startled by similarities in human nature down the ages. The more I know about history the more do I realize that whenever men have faced certain problems that are always recurring in the history of humanity they have solved them in about the same way and with about the same percentage of success or failure, whether in Egypt 6,000 years ago or in Greece 2,500 or in

Rome 2,000 years ago or in the Middle Ages or even in our own time.

Galen's prescriptions are always interesting, especially so because for about fifteen centuries they constituted the model after which most prescriptions were written. Something about him and his work I know, but I am indebted to my brother for some typical prescriptions. We are often curious to know how the ancients treated pain. Here is Galen's favorite prescription, and it is so compounded that it can be used either internally or locally. It must have been rather efficient.

It was meant not only for soothing pain, but also for inducing sleep and banishing various troubles. He assures us that it cured diseases of the stomach, like disagreeable belchings, indigestion, gastric distress of various kinds, and bloating, in a perfectly wonderful fashion. For pains in the head it might be taken as a drink, or applied externally, diluted with vinegar. It might be used as a pastille diluted with pellitory juice for pains in the eye or watery eyes. It might be beaten and put in the cavity of an aching tooth. Diluted with sweet wine and made lukewarm it might be used as a gargle in amygdalitis. Dissolved in myrtle wine it might be used for every kind of hemorrhage, in Therean, Scybelitan, or new wine, for old and recent coughs. Dissolved in horehound juice it was good in phthisis. Dissolved in the juice of the blood-

wort (Sanguinaria) it was good for hæmoptysis, dysentery, cholera, and, in liquor of rue, for snake bite. Taken two hours before an attack in three ounces of diluted wine it relieved intermittent fever. Diluted with the liquor of mugwort (Artemisiac) it acted as an emmenagogue. Dissolved in honey wine it was good for bladder trouble. Diluted with liquor of bitterwort (Gentiana) it was good for arthritis and gout.

Aster Stomachicus marrubii succo dissolutus.

Pepper (piperis), ...3iv;
Saffron (croci), ...3vi;
Poppy juice (succi papaveris), ...3vi;
Cretan carrot seed (seminis dauci Cretici), 3viii;
Anisi, ...3viii;
Massilian hartwort (seselis Massiliensis), 3viii;
Parsley seed (seminis apii), ...3viii.

The opium is dissolved in odorous wine, pounded dry, ground, sifted, mixed with the other ingredients and pressed into pastilles of a half a drachm each, which are then dried in the shade.

We are likely to think that sedative gum for aching teeth is a comparatively recent remedy. Here it is, however, in Galen's time. As a gargle for amygdalitis this probably was quite efficient. I am not sure, however, that I should consider it of benefit in all the many affections for which Galen recommended it. Doubtless, it might relieve a good deal of the tenesmus of bladder trouble and, perhaps, relieve the pains of gout and of arthritis under which name Galen

meant our rheumatic conditions. He had a much better name than we have. It is probable, too, that even most of our vaunted remedies for these affections, though we use them as specifics, do little more than relieve pain. The whole coal tar group is probably only anodyne and has very little effect on tissue conditions.

There is another formula of Galen's recommended for a number of painful conditions. It is the *eclegma nectareum* for those suffering with colic, pleurisy and menstrual troubles.

Spanish cummen (cumini Hispani),.....℥i;
White pepper (piperis albi), ...℥i;
Ginger (zingiberis), ...℥i;
Sweet wine (vini dulcis) either Scybelita or Protropum, ...℥vii;
Falernian wine (vini Falerni), ...℥iiss;
Attic honey, ...1 lb.

Beat dry and sift through a rather coarse sieve, boil with wine until a third part remains, add more sweet wine, and again boil. Stir with branches of rue, supported by a rod of willow and bound with the bark of the willow. It should be stirred alternately with two rods, one containing old dry branches, the other recent branches. After the liquid has boiled twice, add honey, again boil, and strain through a bag. Give two drachms before and after meals.

Before Galen's experience had taught him that specific remedies meant little, and diet and air much, for consumption, he had evidently tried a number of remedies that had been suggested by others as possibly of benefit, or that had

occurred to himself as likely to be curative. At various times, then, as happened to many another distinguished physician, he had recommended, or at least mentioned without disapproving, certain remedies for the affection. Later he came to recognize that these were not beneficial, though occasionally one finds them quoted by those who have but imperfect knowledge of Galen as indicative of the absurd state of therapeutics in Galen's time. I have thought that a discussion of some of them might serve to show that they were not so different from suggestions that had been made and followed quite seriously even in our own time by men who were supposed to be leaders in their profession.

One of Galen's prescriptions for consumption is rather interesting at the present time, owing to circumstances. He suggests the taking of as much powdered yellow arsenic as you put salt on an egg, several times a day. It is a rather indefinite dose, and yet a rather ingenious method of dividing a poison without much trouble or danger. In recent years, we have used the cacodylates rather abundantly for phthisis—otherwise we might possibly think that this was a very foolish prescription of Galen's. There is nothing like finding that we are doing something just like one of the old medical authorities to make us realize that very probably the old medical authority was not so unreasonable after all. Considering the present use of salvarsan as a remedy

for syphilis, another of the chronic infectious granulomata, this prescription is all the more interesting.

Galen mentions the fact that the dried lung of a stag, ground into powder, given three teaspoonfuls in three ounces of honey and repeated every few days, will benefit the patient. I believe that a few years ago we were also giving pulmonin or some form of extract of lung for various pulmonary diseases. It is interesting to realize that Galen's contemporary who advised this particular form of opotherapy selected, as the source of his pulmonary tissue that was to be curative, that of the stag, whose powers of running, and "wind" as the hunter would say, would produce a very suggestive influence upon the patient, who could scarcely help but think that he was absorbing some of that animal's respiratory faculty and pulmonary tissue for his own benefit in the course of taking the remedy.

Occasionally, a prescription seems quite absurd; for instance, that "the skin of the hippopotamus burned and then soaked in water, if it is applied to the body, destroys tubercles just as the skin of the viper when dusted on bald spots wonderfully reproduces the hair." In many of these recommendations Galen is only repeating what he has heard from others, but has not been able to test by his own experience, yet does not wish to condemn and hopes that perhaps his mention of them may lead to some proper testing. It is

just the principle on which many books of therapeutics of modern times are constructed. Turn over your Potter or your Bartholow or your Wood * and you will soon recognize it. Herodotus wrote history that way. He is probably the greatest of historians. He tells the most absurd stories, but he always cites them from some one else. What he says on his own authority has always proved to be absolutely true, though many intervening generations have doubted him and Voltaire spoke of him as not the father of history, but the father of lies. Voltaire was wrong, not Herodotus.

Galen sometimes cites prescriptions from others, and one of these, because it represents the cough medicines that we have had during all the centuries since, at least to a great extent, I quote. Horehound, honey, wine, pitch, with a little saffron, myrrh, and frankincense and a little white pepper and some juice of the house leek, complete the formula. It is known as the prescription of Scribonius Largus for cough, phthisis, etc.

℞ Juice of horehound, ...Oi;
House leek juice (succi sempervivi), ...Oi;
Attic honey (mellis Attici), ...℥x;
Italian wine (vini Italici), ...℥iiss;
Liquid Gruttian pitch (picis liquidæ Bruttiæ), ...℥iiss;
Nardi Indicæ, ...℥i;
Saffron (croci), ...℥i;

* Works on therapeutics familiar to American physicians.

Myrrh, ...℥i;
Frankincense (thuris), ...℥i;
White pepper (piperis albi), ...℥i.
Mix and take as directed.

Galen also cites the antidote of Aristarchus, sometimes called the Pauline antidote, which so many physicians thought a wonder worker. We have come to limit the use of the word antidote to substances that are given to neutralize poisons. In classic times and all during the Middle Ages, however, antidotes were remedies of any kind against disease. We have a whole series of mediæval antidotaria, that is books containing actively curative remedies. The antidote of Aristarchus had a very large number of indications. Some of these indications would seem to us doubtless to be contradictory. Abstracting from that I give just what Galen says about it on the authority of others and then the formula. It is said to be useful for hæmoptysis, cough, suppuration, consumption, convulsions, ruptures, dysentery, and relapsing fevers, in which it should be given one hour before the attack; also in order to produce vomiting, and to prevent vomiting, especially vomiting of bile; also in vesical and uterine disturbances; also as an antidote to all medical poisons and the venom of reptiles.

℞ Cinnamomi,
Costi,
Galbani,

Castorii,
Succi papaveris (juice of the poppy),
Piperis nigri (black pepper),
Piperis longi (long pepper),
Styracis (styrax, a kind of balm of Gilead or opobalsam), of each, ...3i;
Honey, ...℥iiss.

Sift the powders through a very fine sieve. Cook the galbanum with the honey until dissolved, add the other drugs, pound dry, and place in a glass or silver pyx. Take a piece the size of an Egyptian bean in about two ounces of honey-sweetened water, containing nine drops of vinegar dropped from the finger.

Another favorite form of prescription or formula was called a panacea, from two Greek words which mean a cure for everything; among other such Galen cites the panacea of Antonius Musa, which was recommended also by Diogas, a physician who treated by ointments. It was prescribed in continued fevers, protracted cough, phthisis, hæmoptysis, suppuration, dyspnœa, convulsions, ruptures, obstinate inflammations, dropsy, constipation, stone in kidney, suppression of urine, and deadly poisons either vegetable or from the bites of reptiles.

℞ White or long pepper (piperis albi aut longi), ...3viii;
Seed of white henbane (seminis hyoscyami albi),
Cinnamon,
Cardamom,
Myrrh,
Incense (thuris), of each, ...3xii;

Opium,
Saffron,
Tinc. sulphur, of each, ...3x;
Costum,
Long birthwort (aristolochiæ longæ),
Mandrake bark (corticis mandragoræ), or the fruits, or leaves,
Euphorbium, of each, ...3iii;
Cooked honey, ...q. s.
M. Sig.: Give an amount the size of a hazel nut.

It is with regard to such "cure-alls" that many modern physicians draw the conclusion that the ancients were foolishly credulous and that we have advanced in our time far beyond them. We are supposed to be much more scientifically judicious and not to make exaggerated claims. Besides we do not think that one remedy will cure most of the chronic conditions, as the ancients so often seem to have believed. In some ways, perhaps, these complacent impressions of ours with regard to our progress in the principles of therapeutics are possibly true. It is surprising, however, to find how many claims are made in text-books of therapeutics for the most diverse kinds of action from a particular drug. Let me ask you to read, for instance, the paragraphs that Potter has in his "Materia Medica, Pharmacy, and Therapeutics" with regard to iodine. I do not cite them in special deprecation of Potter's, because practically all the others, I understand, are the same, but because his book is handy and because it happens to illustrate very well, as it

seems to me, what is well for us to keep in mind when we condemn too readily or at least make little of old-time physicians, thinking that we are far above them.

Probably our best example of multiform indications, in recent times, however, is that of the salicylates. Take, for instance, what Potter says with regard to salol. It is recommended for acute and chronic rheumatism, for rheumatic gout, to relieve headaches, and for phlegmasia alba dolens, "in which it is considered very efficient":

"It is an effective remedy to cut short an attack of amygdalitis, a bad cold, and other acute affections of the respiratory mucous membrane, also in urticaria and diabetes, gout, and cases that have a tendency to the formation of gallstone.

"Salol is one of the most efficient remedies for duodenal catarrh, catarrh of the bile ducts, and catarrhal jaundice; also in the bilious form of sick headache, and in some forms of neuralgia. Salol is a remedy of very great value in typhoid fever; disinfecting the ulcerated intestine, it promotes the healing process therein and hinders reinfection. It is highly recommended in dysentery, in cholera, and in infantile diarrhœa. . . . It proves to be an efficient disinfectant in catarrh of the bladder, its constituents being excreted with the urine and coming in contact with the vesical mucous membrane for a considerable length of time. . . . Externally, salol is employed as an antiseptic and

deodorant powder against impetigo, eczema, sycosis, and other skin diseases; and has done good service as an insufflation in the treatment of ozæna. In spirituous solutions (5 per cent.) it is used with various flavoring agents in the preparation of mouth washes and dentifrices, and it enters into the composition of soaps, face powders, and other toilet articles. A mixture of equal parts of camphor and salol, heated together, has given good results in the treatment of suppuration of the middle ear, giving no pain, and setting up no inflammation of the part."

Perhaps even a more striking example of polytherapeutics is to be found in Potter's paragraph on the salts of gold. Some years ago these became very popular and a great many physicians, even of some standing, used them for many different ailments and confidently expressed their feeling that a new and very valuable set of remedies had been discovered. We have learned better since. Probably their period of favoritism was due to their use in a much advertised cure for inebriety. As a consequence of their introduction, however, many articles were written, in medical journals, with regard to them, and it is from the reading of these that Potter is fresh when he describes the salts of gold as good for nearly all the ills that human flesh is heir to—a stimulant of all the vital processes.

"These salts of gold, administered in small medicinal doses, increase the appetite and the di-

gestive power and stimulate the functional activity of the secreting organs, especially the skin and kidneys. They also stimulate the generative apparatus, causing diaphoresis, diuresis, and exciting the menstrual flow in women and the sexual appetite in men. The observations of several competent physicians have established the power of these salts to excite the vascular and muscular systems and to produce fever, to increase the urine and the sweat, to cause salivation without stomatitis, a sense of heat in the stomach, headache and diarrhœa, to promote menstruation, excite the genitalia, and profoundly affect the nervous system."

After reading these paragraphs on gold and salol one is tempted to think that if by chance this book should be preserved for a couple of millenniums, as Galen's works have been (which is unlikely), the people of that generation would surely wonder why we needed many further remedies than the salts of gold and the salicylates, since these were able to accomplish so much. If to them I should add the paragraphs on the therapeutics of the iodides, then they would be quite sure that with these three substances we could face any disease. We understand just how this has happened. The author's purpose has been to collect every possible therapeutic reference and incorporate it in his book. He is quite sure himself, very probably, that many of them mean nothing. He cites them on the authority of

others. That is what many of the old-time physicians did with regard to remedies. Unfortunately, such books on therapeutics are read mainly by students and young physicians in the early days of their practice. It is exactly they who need most to be directed in the judicious selection of remedies and who have the least experience to guide them. We fill our text-books with all sorts of impossible therapeutics for their benefit and then are apt to blame writers of the olden time for having been therapeutically so credulous and so prone to claim that their remedies would cure "nearly everything under the sun and a few other things besides."

Details of medical history at Rome show us all the problems that we are accustomed to think of as developments of our time. There are some complaints that druggists paid more attention to groceries and other things than they did to drugs. There were all sorts of peddlers of drugs, and very often these were swindlers. They pretended to a knowledge of medicine and prescribed for people as well as merely sold them simples. There was considerable complaint of substitution on the part of druggists, who did not possess certain drugs, and of impure and inefficient drugs. Physicians often did not know medicine sufficiently well to write prescriptions and accepted ready-made prescriptions of one kind or another. Above all, there was serious complaint of impurity of drugs and of the difficulty

of securing pharmaceutical materials of standard strength. These are all questions that have come up for serious discussion in our time and are supposed to be the special evils of our large city life. At Rome, however, we find all of them mentioned, even by historians who are not writing particularly about medical matters. Friedländer in his "Roman Life and Manners" has a paragraph that sums up most of these difficulties, and as he is an undoubted authority I prefer to read it to you, so as to make it clear that my own tendency to find the old in what is new does not lead me to exaggerate the significance of certain medical movements in Roman life.

"In antiquity dealers in salves, drugs and groceries also sold medicines: the aromatarii were a guild at Rome; there were, besides, travelling hucksters and swindlers. From such shops, Pliny the Elder complains, doctors often bought the remedies, instead of exercising their proper profession of making them. The ingredients they scarcely knew, and, should they desire to make up written prescriptions, would be cheated by the salesmen. Many doctors bought plasters and drugs ready-made. Galen also groans at the frauds of those 'cursed dealers,' and says they, too, were innocent victims of the collectors of herbs, who brought saps and flowers and fruits and spirits into the towns. But the ingenious make-ups of these men would deceive the greatest experts. Galen, in his younger days, had been a

pupil under a man who forged balsam, Lemnian earth, white flowers of zinc and other rare drugs to perfection, and earned thereby largely; Galen, however, would not have his methods known, and fall into the hands of the unconscientious; he rather hoped to incite the young, by his writings, to investigate and discover the workings of the healing plants for themselves. Any one who would have the command of all medicaments, must understand what are the useful parts of plants, animals, metals and minerals, and be able to distinguish genuine examples and forgeries." *

It is rather interesting to place beside this paragraph in which physicians are said not always to know the exact ingredients of the compounds which they employed some of the complaints of the modern time with regard to the writing of prescriptions for proprietary preparations of various kinds, the ingredients of which were not exactly known. In the intervening period between Rome and our own time, just at the end of the Middle Ages, is a rather strong complaint on this subject from a mediæval physician, who is sometimes spoken of as the father of pharmaceutical chemistry. He can scarcely find words emphatic enough to blame such physicians as, knowing nothing about remedies and their composition, take them from others and give them to the sick. There is a curious bit of aspersion on

* "Roman Life and Manners," Friedländer. Translated by L. A. Magnus Dutton.

mere book learning in the passage that has a distinctly modern ring, and one feels the truth of Russell Lowell's expression that to read a great genius, no matter how antique, is like reading a commentary on the morning paper, so up-to-date does genius remain:

"And whensoever I shall have occasion to contend in the School with a Doctor, who knows not how himself to prepare his own medicines, but commits that business to another, I am sure I shall obtain the Palm from him; for indeed that good man knows not what medicines he prescribes to the sick; whether the colour of them be white, black, grey, or blew, he cannot tell; nor doth this wretched man know whether the medicine he gives be dry or hot, cold or humid; but he only knows that he found it so written in his Books, and thence pretends knowledge (or, as it were, Possession) by Prescription of a very long time; yet he desires to further information. Here again let it be lawful to exclaim, Good God, to what a state is the matter brought! what goodness of minde is in these men! what care do they take of the sick! Wo, wo to them! in the day of Judgment will they find the fruit of their ignorance and rashness, then they will see Him Whom they pierced, when they neglected their Neighbour, sought after money and nothing else; whereas were they cordial in their profession, they would spend Nights and Days in Labour that they might become more learned in their Art, whence more

certain health would accrew to the sick with their Estimation and greater glory to themselves. But since Labour is tedious to them, they commit the matter to chance, and being secure of their Honour, and content with their Fame, they (like Brawlers) defend themselves with a certain garrulity without any respect had to Confidence or Truth." *

Had we lived four or five hundred years ago we should all have been faithful students of the text-books of medicine, or perhaps several of them written by this same Basil Valentine, a monk, and containing many wise observations on medicine. One of his expressions is so modern as to be quite striking. He says: "It is quite possible that the physician should err and be turned aside from the straight road, but that Nature, when she is rightly treated, should err is quite impossible." The man who thus insisted that Nature was the most important guide in the treatment of disease is yet also the author of the "Triumphal Chariot of Antimony," a book which led all the practitioners of medicine for a century or more to prescribe antimony at the beginning of all affections and, particularly, all fevers. Doubtless we too should have written our prescriptions for antimony, had we lived at that time. Patients wanted remedies administered to them that would produce an effect and, above

*For further quotations similar in tenor see my "Catholic Churchmen in Science," Life of Basil Valentine.

all, they liked to have effects that the doctor could foretell. When antimony was administered there was usually no doubt about the effects that would ensue; prophecy was easy. Practically the remedy always did more harm than good, but it was a long while before it went out of fashion. The principle underlying its use was that elimination from the intestinal tract must have a beneficial, derivative action on the body. The body *must* be bettered by having all that offensive material removed out of it.

At the present day there are a great many physicians who are quite sure that a great many of the ills of mankind come from intestinal autointoxication. They did not have quite such a nice long term for it in the olden time, but they meant the same thing. We have a number of remedies to prevent the absorption of toxines from the intestines, or at least that are supposed to prevent it. The fifteenth and sixteenth century physicians had but one—antimony, and they used that freely. When antimony went out of fashion in prescriptions, it did not stay out for good, but had a very wonderful restoration to popularity in Louis XIV's time. The king suffered from typhoid fever. Needless to say that particular form of fever had not been differentiated from other forms, and the physicians did everything they could to break up the king's fever, but to no purpose. Everybody of any reputation in Paris had been summoned to the

king's bedside. Some twenty-four days had passed and the fever still continued. Almost in despair an old physician with old-fashioned methods, but with a reputation all his own among the populace, was asked to see the king in consultation. He recommended antimony; fortunately (or unfortunately, for there is room for question in the matter), it did not kill the king and, as the fever broke on the second day after the administration of the remedy, antimony acquired a new vogue that was to last almost to our own time.

Many of the prescriptions of the Middle Ages contain very curious deterrent ingredients. Crushed lice, moss from the skull of criminals who had been hanged and whose skeletons had been exposed to the elements for years, portions of mummies and corpses of more recent date as well as excrementitious materials of various kinds were used for therapeutic purposes. Some of them had the reputation of producing very wonderful results. They were efficient through the mind rather than through the body. It is surprising, however, how long the use of such materials endured. Mummy, for instance, remained in the European pharmacopœias until well on into the eighteenth century. Now that the eleventh edition of the "Encyclopædia Britannica" is being exploited with all the ingenuity of modern advertising methods, it is rather interesting to realize that in the first

edition, issued only 150 years ago, there was a description of mummy as a material of great value in therapeutics and that had been used for a long time. Every now and then in the course of medical history one finds that some one is describing portions of animals for definite indications in medicine. When heart disease was suspected, patients were fed hearts and even tripe and chitlings were supposed to be particularly beneficial for stomach and intestinal troubles of various kinds.

One of the stories in the "Hundred Merry Jests," the oldest joke book in English, contains a reference to medical opinion with regard to birds in the dietary of dyspeptics that is rather interesting. This portion of the story is evidently told quite seriously, the joke being in the tail of the story. A man who was suffering from dyspepsia was advised by his physician to live almost exclusively, at least so far as meat was concerned, on certain little birds which were always on the wing and whose meat therefore must be very light and consequently easy of digestion. The patient replied that in that case his wife's tongue ought to be extremely easy of digestion because it was never still. Perhaps his remark reveals one part of the ætiology of his indigestion. Fresh tongue at breakfast, dinner and supper is a very cloying diet. Nagging has been known to cause indigestion, and there was a suspicion, even during the Middle Ages, that the

cause of a good deal more of the indigestion was above the neck than below it.

We are perhaps likely to think that such use of animal tissues and viscera with definite specific therapeutic purpose is absurd if not ridiculous. Let us not forget, however, that only about ten years ago we were reading many reports of the successful treatment of various affections of internal organs by animal therapy or, as we called it learnedly, opotherapy. It went so far as to use prostatic tissue for prostatitis and other just as interesting combinations. When the historian of medicine reviews our use of cardin for heart disease and nephrin, or was it nephritin, for nephritis, and, above all, cerebrin for brain and nervous troubles, surely he will have just as much right to laugh at us for taking these things seriously as we have for laughing at the mediæval physicians. Yet we were not absurd, we were only trying in every way possible to help patients and, having seen the action of the thyroid gland in cretinism, thought we had discovered a new principle of therapeutics and were groping after anything that would help our patients.

Only let us not forget that this is just what the ancient and mediæval physicians were doing with just as much ardor, just as much sincerity, and also with just as much logic as we. That is where we make the mistake in judging of past generations. From our standpoint we see the ridiculousness, as we think, of some of the things

that they did. We forget that our doings may seem just as ridiculous to another generation. Professor Richet, director of the Department of Physiology at the University of Paris, said not long ago: "The therapeutics of any generation always seems absurd to the second succeeding generation." Sometimes, as in the case of opotherapy, it does not take as long as that to disclose the absurdity. Evidently our generation shall not be spared the usual fate in this matter.

DENTISTRY, HOW OLD THE NEW

"An old cloak makes a new jerkin."
—SHAKESPEARE: *Merry Wives of Windsor*, I. 3.

DENTISTRY, HOW OLD THE NEW *

WHEN your committee of arrangements asked me to read a paper before this session of your society, I felt of course that the reason for the request was that some of my contributions to the history of medicine, and especially to the anticipations of what we are likely to think of as distinctively modern medicine and surgery in the distant past, had attracted their attention and suggested to them the possibility of a similar treatment of certain historical phases of dentistry. When I accepted their invitation I was not sure that I should find many significant anticipations of the modern development of dentistry, though I knew that there were some, and I felt reasonably sure that there must be much more of dentistry in history than our generation was inclined to think.

I think that I may say that if there is one development of what the French call external medicine, that is, those affections that can be treated directly by local or remedial measures and that belong as a rule to the surgeon, which we have been sure is recent in its origin, it is dentistry.

* An address delivered before the Pennsylvania State Dental Society at its Forty-third Annual Meeting, June 28, 1911, Scranton, Pa.

Our dental science is ordinarily presumed to have come into existence within the last century or so, and its special methods of treatment are presumed to be quite recent inventions.

There is, however, an extremely interesting history of dentistry extending back into the twilight of the times to which men's memories extend farthest. There are epochs of progress, and evidently also of deterioration, that are hard to understand. Over and over again men have had to rediscover certain modes and methods of treatment of the teeth for their preservation and invent apparatus to replace them when they had been lost. We are in the midst of a very progressive phase of dentistry in our time, and yet it is not hard to find nearly everything that we are likely to pride ourselves on as original with us anticipated in the long ago. We are rather accustomed to think that a definite process of evolution has brought to us a certain inevitable perfection of human expression and great manifestation of the inventive faculty in our time, but history shows us men frequently making inventions quite like those we pride ourselves on, yet there are succeeding epochs in which nothing is recalled of them and the inventions and discoveries have to be made over again. The supreme mystery of human history, indeed, is not how men make progress, but how, after certain steps of progress have been made, they are retraced and knowledge of progress is lost and de-

generation brings about the obliteration of accomplishment that seems surely fated to influence men for all the after time.

Dentistry is, however, one of the branches of surgical practice that most people, even dentists and physicians and surgeons, would be quite sure have not been anticipated. It has surely all been the development of the last generation or two, or at most a century or so. What I am going to try to show you to-day is that even dentistry has its old-time history which occurs not in one period, but in a series of dental epochs, each one of them marked by some great advance in the care of the teeth, in the replacement of lost teeth either for cosmetic or utilitarian reasons and usually for both. Indeed I know no phase of this subject of how old the new is that is more startlingly illustrated than what is to be found in the chapters of the history of dentistry as it has been collected for us by many authorities in various parts of the world during the past score of years. There is not a mode of procedure, scarcely an invention, and almost none of our knowledge in dental matters that was not known at least four hundred years ago and, surprising as it may seem, not a few of them several thousand years ago.

This is very well illustrated in the history of surgery, the department of medicine to which dentistry is most closely allied. We have been accustomed to think that surgery was compara-

tively new, a development of these later times, and that its most important features had come into practice only during the last two or three generations. Our faith in our impressions has been rather sadly disturbed, however, by certain recent republications. Nicaise in France and Pagel and others in Germany have been issuing modern editions of old surgical text-books. Most of these had been printed before during the Renaissance time, and especially during the early part of the sixteenth century when so many precious books that had hitherto been circulated only in manuscript were put into type. Nicaise and Pagel particularly devoted time and care to the editing and republication of text-books of surgery from the thirteenth and fourteenth centuries. Gurlt, in his great German "History of Surgery," has been piecing out the information provided by this republication of old texts. The consequence is a startling revolution in history which shows us the anticipation, six hundred and seven hundred years ago, of all that we consider most modern in surgery.

Such men as Mondeville, and Guy de Chauliac, —we shall have considerable to say about him afterwards in the story of dentistry,—described most of our forms of operation and instruments and details for operating. They describe operations on the skull for abscess and tumor, on the thorax for fluids of various kinds and especially for pus and on the abdomen for many internal

conditions. They set it down as an axiom that, if a patient had a wound of the intestine, death was almost inevitable unless that wound were repaired. They operated particularly for the radical cure of hernia and even advised an exaggerated Trendelenburg position, the patient being operated upon with the head dependent on a slanting board. It seems impossible to us that such operations should be done without an anæsthetic, but another great surprise is that we find they had two or three forms of anæsthesia. They used combinations of opium and mandragora, and by means of venous decoctions they succeeded in soaking sponges with inhalants that were anæsthetic in their action. It would surely have been fatal for their patients if they knew nothing about antisepsis. Formally they knew very little about it but in practice they used strong wine in dressing their wounds, insisted that nothing else should be used; this acted as an antiseptic and they got union by first intention. It is to them we owe the expression, and they boasted of the pretty linear cicatrices that followed their operations.

It fairly takes one's breath away to hear of such anticipations of what is most modern in our surgery in the thirteenth and fourteenth centuries. Anæsthesia and antisepsis, we have calmly assumed as discoveries of recent times. With regard to anæsthesia, it is interesting to recall that some of the old poets of the sixteenth and seven-

teenth centuries wrote of the mercies of old surgeons who put their patients to sleep before they cut them. In many of the old poets we have references to drinks of various kinds that produced unconsciousness and insensibility to pain. Just how, these discoveries having been made, men forgot about them is indeed a mystery. It would seem impossible for such marvellously beneficial inventions and practices to be lost or forgotten. Human history, however, is full of this sort of thing. Each nation that in turn has been a leader among mankind has made its discoveries for itself. Sometimes it has been very much helped by the story of preceding progress, but oftener only hampered. Rome had the benefit, though it proved a doubtful benefit, of the inheritance of Grecian science and culture, and perhaps as a consequence we have not a single original idea from Rome.

Men have often done things and then forgotten about them. The Suez Canal is said to have been opened once before our time and to have remained open for several centuries. It was then allowed to fill up with sand and forgotten. America was discovered at least two or three times before Columbus' time; there was a Bishop who mentions missions in Greenland and probably also over on the Continent during the thirteenth century, and yet this does not detract from Columbus' discovery, above all as regards originality, for nearly all had been for-

gotten about these previous discoveries and at most but hints remained.

How curiously interesting it is, for most people, to find that, though Rome has always had inhabitants, the significance of certain very special appearances in it were entirely lost. The mound now known as Monte Testaccio was not thought to be artificial until, by chance, it was found to consist of the remains of broken Roman wine jars of the olden time that had been thrown here and gradually accumulated. The Palaces of the Cæsars were lost entirely, having become covered by the dust and dirt of centuries and, while crumbling into ruins, produced the appearance of a hill on which modern buildings were erected and beneath which the excavations had been made. For many hundreds of years there was no hint that these buildings were here. Thus does man forget. We shall not be surprised, then, to find many ups and downs in the history of dentistry as well as these other phases of human history.

Definite human history, as we have it, begins with Egypt. Medicine reached a high development in Egypt. In the address to the graduates at the first commencement of the Medical School at Fordham University three years ago, I told them that they were going out to be members of the profession whose history could be traced for something more than 6,000 years and the professional dignity of which had been maintained

by some of the noblest of human characters over six millenniums ago. Our knowledge of dentistry in Egypt is not as full or definite as we would like to have it and not nearly so complete as our knowledge of medicine. A number of writers on Egyptian history and some of the excavators have declared that various prothetic apparatus had been found in the mouths of mummies or in mummy cases or in the tombs. It was even said that both filled and artificial teeth had been found in the mouths of mummies, the cavities in the former stopped with gold and in some cases with gilded wood. It has even been claimed that specimens of these filled teeth were in possession of archæologists and that some of the prothetic apparatus was also preserved. These expressions, however, are hard to verify and are now generally doubted.

The Egyptians reached such a high standard of attainment in the arts and crafts that it would be surprising indeed if they had not invented various dental appliances, and we might expect to discover some forms of prothetic apparatus. They have either not been found, however, or have been found so rarely that the theory has been suggested that the religion of the Egyptians forbade them to bury such artificial apparatus with the bodies of the dead. These bodies were to be preserved in the hope of future requirement of them by the soul after it had

spent a prolonged period apart from the body. It seems unlikely that a people so beauty-loving would not have known some means of replacing a lost front tooth, but as these have not been found in the skulls it had been thought that they were removed after death during the process of embalming by which the bodies were to be preserved. Sometimes the faces of the dead were coated with gold leaf and some of this would cling to the teeth and might easily be mistaken for a gold filling if examined carelessly. Our various collections of Egyptian skulls are not satisfying, however, to the student of dental archæology because they present so little that is of interest.

From the side of medical or palliative treatment we have much more definite information. A certain number of the prescriptions in the "Ebers Papyrus," the great medical document of early Egyptian history discovered by Dr. Georg Ebers, are meant for ailments for the teeth. This is not surprising, for it contains descriptions of remedies for nearly every form of disease that we now know and mentions all sorts of drugs. In discussing Prescriptions Old and New (see chapter in the present volume) before the joint meeting of the New York County Medical Society and the New York Branch of the American Pharmacal Association, this winter, I called attention to the fact that the apothecaries of old Egypt might quite reasonably

have made as many complaints as do the druggists of our day with regard to the necessity for carrying a large stock of very varied drugs. Altogether, over 700 drugs of different kinds are mentioned in the Papyrus. They were to be used in every way that we now use drugs, and elegant prescribing was an especial feature at least of the time of the Papyrus itself. While the Papyrus was written, as I have said, about 1600 B.C., it has incorporated with it medical writings of much older time—some of them at least 1,000 and a few perhaps even 1,500 years before the Papyrus itself was written. The date of it is usually set down as about 1650 B.C. Knowing this and the wonderful development of all the arts and crafts reached in Egypt it would be surprising if they had not discovered ways of filling the teeth and invented artificial apparatus to replace loss of the teeth. Dentistry has always taken advantage of the mechanical skill of each succeeding generation for its own purpose.

Another ancient nation, however, presents much more satisfactory evidence. There is to be seen among the objects found in the necropolis of Saida, the ancient Sidon, an extremely interesting specimen. It has been described as a part of the upper jaw of a woman with the two canines and the four incisors united together with gold wire. Two of the incisors would appear to have belonged to another individual and to

have been applied as substitutes for lost teeth. This prothetic apparatus, found in one of the most ancient tombs of the necropolis, the date of which is probably not later than 1500 B.C., proves that the dental art among the Phœnicians had reached a rather high development. A sketch of this specimen, which was found by Dr. Gaillardot, a colleague of Renan, in his excavations in Phœnicia, as reproduced in Renan's "Mission de Phénicie," is presented to show

FIG. 3.—Phœnician denture found at Sidon, as represented in a cut of Renan's "Mission de Phénicie." —(Guerini, p. 30. Fig. 3.)

how well founded is the claim of dental invention in very old time. As the great cities of Phœnicia, Tyre and Sidon, obtained most of their arts and inventions from Egypt, Guerini, in his "History of Dentistry," * argues that if there were dentists in Sidon capable of applying false teeth it may reasonably be admitted that the dentists of the great Egyptian metropolis Thebes and Memphis were able to do as much and probably even more, the level of civilization being without doubt higher there than in Tyre or in Sidon or in other non-Egyptian cities.

* "A History of Dentistry from the Most Ancient Times to the End of the Eighteenth Century," by Dr. Vincenzo Guerini; Lea & Febiger, New York, 1909.

What we know of Phœnicia, and especially of its two great cities Tyre and Sidon, makes it very clear that their skill in the working of metals was such as to render it comparatively easy for them to fashion metallurgical appliances for defective teeth. It is of these cities that old authorities write in enthusiastic praise whenever there is question of their metal-work. It was to them that Solomon applied for most of the precious metal-work in connection with his great Temple. George Rawlinson says in the "Story of Phœnicia": *

"For metallurgy, Tyre and Sidon were, in the remoter times, about equally famous. It was a Tyrian artist who constructed, for Solomon, those magnificent works in bronze, which were among the chief glories of the Temple at Jerusalem, the two pillars called Jachin and Boaz, each nearly forty feet high, elaborately ornamented, and the 'molten sea' or great laver, fifteen feet in diameter, supported on the backs of twelve oxen, arranged in four groups of three. It was the same artist who fashioned for the same king 'the altar of gold, and the table of gold, whereon the shewbread was set, and ten candlesticks of pure gold, with their lamps and flowers, and the tongs of gold, and the bowls, and the snuffers, and the basins, the spoons, and the censers of pure gold, and the hinges of gold, both for the doors of the inner house, the most holy

* The Story of the Nations Series, Putnam, New York.

place, and for the doors of the house, to wit, of the temple' (1 Kings vii. 45-50). On the other hand they were Sidonian artists whose works in silver Homer celebrated as 'most beautiful' —the most beautiful in all the world; and it is to Sidon and not to Tyre that Strabo ascribes especially the manufacture of drinking vessels in gold and silver."

Some of their specimens of precious metal-work that we have from Phœnicia—gold necklaces, bracelets and the like—show a thorough command of the material in which they worked. One of the necklaces of Phœnician origin found in Cyprus is made of gold and rock crystal beads, with a beautiful little vase of crystal with funnel and base of gold as a pendant, that has been declared as beautiful as anything of that kind ever made. They succeeded in carving precious stones and especially the harder stones, carnelians, agates, sards, chalcedonies, onyxes and rock crystals, with wonderful perfection. The Egyptians had used only softer materials. The Babylonians had introduced the use of hard materials, and then the Phœnicians combined the engraving skill of the Egyptians with the better choice of materials of the Babylonians and surpassed both. King, in Di Cesnola's "Cyprus," does not hesitate to say that they succeeded in accomplishing their engraving efforts "with a precision that proves the mechanical part of the engraver's art was developed by

them to a degree of perfection never afterwards surpassed."

Of Sidon more particularly there is much that comes to us from Homer. Rawlinson has summed it up in a well-known paragraph of the "Story of Phœnicia":

"The textile fabrics, the works in metallurgy, and the vases and other articles in glass which Phœnicia produced, bore the highest possible character in the early ages, and were everywhere accepted as the *ne plus ultra* of perfection, combining as they did the best materials, the best workmanship and the highest artistic taste and elegancy. When Achilles at the funeral of Patroclus would offer as a prize for the fastest runner the most beautiful bowl to be found in all the world, he chose one which had been deftly made by highly skilled Sidonians, and which Phœnician sailors had conveyed across the cloud-shadowed sea. When Menelaus wished to give Telemachus what was at once the most beautiful and the most valuable of all his possessions, he selected a silver bowl with a golden rim, which in former days he had himself received as a present from Phædimus, king of Sidon. All the royal robes of Priam's queen, the renowned Hecuba, were the work of Sidonian women, brought from the Sidonian land by Paris, when he came to Troy with Helen; and the choicest offering that she could find to present to Athene on behalf of her favorite son was one of these robes, the most

beautifully embroidered, and the longest, which shone with the brightness of a star."

The men who did all this artistic work could have had little difficulty in fashioning even the most complicated of metallic prosthetic apparatus, and the finding of so few specimens only indicates very probably that, in the wreck and ruin of the ages, others even more perfect than the specimen we have here disappeared.

We might expect that after the traditions of Egyptian dental work and the actual specimens of the Phœnicians, the next landmark in the development of dentistry would be found in the history of Greece. In recent years, however, we have been finding a number of interesting sources of early history beyond the confines of Greece. One of them is ancient Etruria, the country of the old Etruscans in Italy. They lived in and around what we have come to call the "hill country" in the northern central portion of the Italian peninsula. The Etruscans flourished before the foundation of Rome, which is traditionally placed about 750 B.C. A portion of their country is our present Tuscany. As one of their old names was the Toschi, the name of the region is probably derived from this. We have learned in recent years that these people were traders and that they visited not only Greece but Egypt and Phœnicia, and especially the great cities of Memphis and Tyre and Sidon, and probably also

Crete and other islands of the Mediterranean Sea besides many other regions of Italy.

The findings in the tombs of the Etruscans have been most interesting. Guerini, who was appointed by the Italian government to make a special study of them, has gathered them in his history of dentistry already referred to. Many of the Etruscans burned their dead, but there are many tombs with bodies of the sixth and seventh century before Christ, in which specimens of dental prothetics are to be found. In the Civic Museum of Corneto, the ancient Tarquinii, there are two dental appliances. One of them is a series of bands of metal for supporting three artificial teeth, two of which were made of one ox-tooth, grooved in order to simulate two human teeth. Guerini has a rather interesting paragraph or two with regard to this:

"When I was intrusted with the reproduction of all the ancient prosthetic pieces existing in the Italian museums I met with special difficulty in the reproduction of the above-mentioned piece; and this because I could not succeed in producing an ox-tooth that was not worn away by the effects of mastication. The idea then occurred to me of sectioning the upper jaw of a calf at about the age of the second dentition, and taking out the teeth, which were already strong and well formed, but not yet deteriorated by mastication. I fancy my Etruscan colleague must have done the same three thousand years

ago, when he carried out the prosthesis in question, for the large tooth employed by him does not show any signs of being worn by mastication.

" This large tooth is solidly fixed by means of two pivots to the gold band that encircles it. Another pivot served to fix the second bicuspid, also artificial. This tooth, as already stated, has now disappeared, but the pivot that fixed it to its ring is still in place. In carrying out this prosthesis the dentist has contrived the series of rings that support the teeth in such a manner that they remained above the gum, and thus the harmful effects of contact and of the pressure of an extraneous body was avoided. At the same time this arrangement, by distancing the rings from the dental neck that narrows off conically, added to the firmness of the prosthesis."

The other specimen at Corneto is an Etruscan appliance for supporting two inserted human

FIG. 4.—Etruscan denture for supporting two inserted human teeth, one of which is now wanting. (Civic Museum of Corneto.)
—(Guerini, p. 73. Fig. 18.)

teeth, one of which is now wanting. An illustration of this appliance is here given. These specimens are in the Civic Museum at Corneto.

In the private museum of Count Bruschi in the same town are also two Etruscan dental appliances. One of these is composed of a series of four rings fitted on the upper canine on the right and the three incisors closest to it. One of these incisors was an inserted tooth which was held by a pivot. The tooth itself has disappeared, but the pivot by which it was fixed to the ring as well as the three natural teeth that afforded

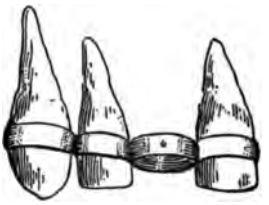

FIG. 5.—Etruscan denture supporting one inserted tooth (upper middle incisor on the right), which has now disappeared. (Museum of the Conte Bruschi at Corneto.) —(Guerini, p. 73. Fig. 19.)

support to the appliance remain. The other specimen of dental interest is not so easy to explain, but was, as has been suggested, perhaps intended to prevent the converging of two teeth—the left upper canine and the left middle incisor—which had a tendency to become approximated owing to the absence of the incisor that usually occurs between them. There are two rings of gold around the teeth and a rather solid bar of the same metal between. Guerini suggests, though the suggestion seems a little far-fetched, that this appliance may have been worn merely for cos-

metic purposes. The bar of gold would supply to some extent to the eye for the missing tooth.

The Etruscan dentistry seems to have influenced the Romans to a considerable degree, for in the Laws of the Twelve Tables, written not later than 450 B.C., there is an interesting expression with regard to the burial of gold. Gold was scarce and precious, and apparently the Decemviri, that is the ten magistrates under whom the commission was appointed to draw up these laws, but who, it should be recalled, used some old sources for this purpose, wanted to prevent the disappearance of the metal from Rome to as great an extent as possible. (They were as intent on keeping up the gold reserve as any of our modern governments are.) Hence they forbade the burial of gold ornaments with the corpse or of the putting of any gold on it; but they said "it shall not be unlawful to bury or burn the corpse with the gold with which the teeth may be perchance bound together." There has been some dispute as to the meaning of this expression. Serre suggested that the reference was to gold used for fixing artificial teeth. Geist-Jacobi in his "History of Dentistry" rather favors the idea that the reference is to gold wire used for supporting loose natural teeth. Our knowledge of what the Etruscans had done in this matter and of the specimen found among the Phœnicians would rather incline us to think that the reference was to arti-

ficial teeth, though perhaps some of the apparatus like that Etruscan appliance last described might be for supporting purposes.

These discoveries of the development of dentistry among the Etruscans have thrown new light on this wonderful people. Perhaps nothing shows better how uncertain human history may be than the fact that the existence of this wonderful people, almost equal to the Greeks in their culture, has been hidden from us until recent years. Most of us who read the story of Coriolanus are rather prone to rejoice over the fact that his mother's pleadings and his wife's prayers did not remain unheeded and that as a consequence the Volsci, who were one of the peoples of old Etruria whom we now know as Etruscans, did not capture Rome, though had Coriolanus continued in the leadership they would surely have done so. We do not realize that at the time when this happened the Volsci were far above the Romans in culture and in civilization, and indeed the Romans were only a barbaric people bent on war and conquest and caring nothing for the arts or the intellectual life. Of course the same thing was true of Carthage. When the Roman army levelled Carthage the African capital was a city beautiful, while Rome itself was scarcely more than a collection of rude huts. When we know more about the Etruscans we appreciate better how wrong were our previous views of them and how much a discovery such as that I have de-

scribed with regard to bridge-work might be expected among them.

Another specimen found in Italy, but the precise derivation of which is not easy to determine, turned up in the Græco-Roman necropolis near Teano in the Province of Cæserta in Southern Italy. This was meant to support three inserted human teeth, the two central incisors and the right lateral incisor. The apparatus was made of laminated gold wire turned round the teeth

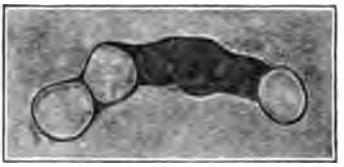

FIG. 6.—Prosthetic piece of very peculiar construction found in 1907 near Teano, Italy. —(Guerini, p. 79. Fig. 26.)

and then soldered. A picture of it, as given by Guerini, is here presented.

In the Museum of Pope Julius in Rome there is a dental appliance, found in one of the many Etruscan tombs excavated at Valsiarosa, near Civita Castellana, the ancient Falerii (Fig. 7). This denture is formed by a series of four gold rings meant to encircle four teeth, the canine, the bicuspids and a first molar. The third ring has, passing through it, a pivot, riveted at the two extremities, which was meant to hold fast an artificial tooth, the second biscuspid. Unfortu-

nately this is wanting in the specimen, but the significance of the piece is easy to understand.

FIG. 7.—Etruscan denture found at Valsiarosa, destined to support artificial bicuspid, now disappeared. —(Guerini, p. 71. Fig. 15.)

Greek influence was very strong in the southern part of Italy, which had been settled by colonists from Greece and which was often spoken of as Magna Græcia. As we have very few imitations of artificial appliances for the mouth from Greece, and as this part of the country was in rather intimate relations with Rome and through Rome with the old Etruscans, it seems to me not unlikely that this must be

FIG. 8.—Roman denture found at Satricum; crown of lower incisor made of gold. —(Guerini, p. 101. Fig. 31.)

FIG. 9.—The same, seen from below. —(Guerini, p. 101. Fig. 32.)

classed rather as a Roman or Italian product than a Greek invention.

There is in the Museum of Pope Julius at Rome a dental specimen which makes still more

sure the development of dentistry among the Romans. This is no less than an example of ancient crown-work. The crown was made of two small plates of gold, soldered together to form the crown of the tooth, and the crown itself is soldered to two narrow strips of gold which encircle the neighboring teeth on the right and left and serve as a support to the rest of the apparatus. See Figs. 8, 9.

All of these pieces are comparatively recent discoveries and have been preserved in spite of many conditions tending to destroy them. It seems not unlikely that further discoveries of a similar nature and even more interesting, because showing varied developments of the dentist's art at Rome, will be unearthed. In spite of the evidence derived from actual specimens of the existence of dentistry and of further evidence drawn from Roman literature, which has many references to dental work, the Romans had no name to designate the particular specialty devoted to caring for the teeth. It has been argued that if there were dentists devoted particularly to the specialty the Romans would surely have had a name for it. Geist-Jacobi has in true German fashion suggested what that name would be—*artifex dentium* or *artifex medicus dentium*. The absence of a special name would seem to indicate that probably dentistry was in the hands of the medical profession. Since the mechanical skill necessary to make such metal prosthetic apparatus

as crowns and bridges scarcely seems compatible with the devotion to the whole round of medical practice, it is possible that assistants were employed for such purposes under the direction of the physician.

As for treatment of the teeth apart from artificial appliances there was much more than has usually been thought. Most of what we know on this subject comes to us from writers at Rome, though they were often not Roman writers but usually Greek. The most celebrated of them, however, Cornelius Celsus, who was a scion of one of the great Patrician families, that of the Cornelii, was a Roman of pure stock. His work is gathered in great part from Greek authors and it is usually said, as I suggested before, that he was not a practising physician, but only an amateur of medicine who made it a special study. He tries to persuade physicians and patients to preserve even teeth that ache and show signs of decay as long as possible. There was a paste that he recommended for toothache composed of one part of poppy, two parts of pepper, and ten of an impure copper sulphite, called *sory* in the olden time, mixed to a paste with galbanum. For larger cavities he added saffron, cardamom and ground mustard seed. This was particularly for the large cavities of the molar teeth. When teeth become loosened he recommends the use of astringents, or if the gums are throbbing light touches with a red-hot iron. If they were loos-

ened by a blow or by an accident they were to be fastened to the neighboring teeth by gold wire and astringent substances used in the mouth. When hemorrhage continues after the pulling of a tooth or its removal in any way, it often means that a piece of the jawbone has been broken off and this must be searched for with a probe and extracted. Sometimes after the pulling of a tooth one or more of its roots remain, and this should be removed by a special forceps adapted for the purpose.

He has a number of interesting observations with regard to affections of the mouth. He differentiated, carefully, those ulcers of the mouth which the Greek called aphthæ and evidently understood their significance. He says that they oftentimes lead to death in children, though they are not dangerous in adult men and women. They begin in the gums and then they spread to the palate and the rest of the mouth and even extend to the uvula or the fauces. When they spread all over the mouth the prognosis is bad. Honey mixed with astringent preparations was his prescription for these ulcers. It may be well to say that honey has constituted one of the ingredients of most mixtures for the treatment of this condition down to our own time, and I am not sure whether it has gone out even at the present. Certain ulcers of the tongue that last a long while are on the borders of the organ, and Celsus says: "It should be seen whether

there may be some sharp tooth opposite which hinders the ulcer from healing. In case such a tooth exists it should have its edge taken off with a file."

After the foundation of the Empire, Greek physicians came to Rome and they brought various remedies for the teeth with them. We find much more of treatment for aching teeth than of professional skill for their preservation. In my previous paper on Prescriptions Old and New, I called particular attention to the fact that a good many of our prescriptions and formulæ for treatment were much older than we thought. For instance the ordinary cough medicine consisting of honey, tar, horehound and some aromatics was in common use in Galen's time, that would be over 1,700 years ago, and as he quotes it from some one else it seems to have been employed for a considerable period before. With that in mind it is easier to understand the description also by Galen of a gum for the treatment of aching teeth.

This was not made particularly for aching teeth, but was an anodyne or pain-killer for many painful conditions, headache, stomach ache and other pains. It was suggested, however, that it might be used in the form of a gum for aching teeth. We are likely to think that this idea of toothache gum is a modern invention. Here it is, however, in the old Roman days. The ingredients make it reasonably clear that it was probably rather effi-

cient. It contained pepper, saffron, the juice of the poppy (that is, crude opium), creton, carrot seed, anise seed and parsley seed. The poppy juice was dissolved in wine, allowed to dry, then ground, sifted, mixed with the other ingredients and pressed into pastilles, portions of which were then inserted into the cavities of aching teeth.

The more we know about the medicine of this old time the more we admire it. Galen, who recommends this valuable prescription, anticipated many of our modern ideas. For instance he insisted that for consumption the best treatment is rest with an abundance of fresh air and of nourishment. He thought that the best forms of nourishment were eggs and milk. He was quite sure that medicines did very little good and that the men who gave them only abused their patients' stomachs, while many who recommended medicines only wanted to make money out of the poor consumptives. You see how very old the newest things in medicine are.

It used to be thought that removable dentures were not used by the ancients, that indeed they had not invented any such thing. Bridge-work and capping and various permanent appliances for dental prosthesis are admitted to have been used only after the actual specimen is seen. A more careful reading of the satiric poets, however, shows that removable dentures must also have been rather common. The poet Martial ridicules a wanton old woman by telling her in the midst

of a number of unmentionable things that at night she lays down her teeth just as she does her silken robes. He also tells of two witches so frightened that, running away, one of them loses her false teeth and the other her false hair. It is evident that the joke would have been quite incomprehensible only that the possibility of false teeth coming out as false hair comes down was well known to everybody. There are a number of other references which show how common false teeth must have been. All sorts of tooth-powders and dentifrices were used by the Romans, and Martial represents one of these dentifrices, apostrophizing a toothless old woman who had artificial teeth, as follows: "What is there between me and thee? Let a young girl use me, for I am not accustomed to cleanse teeth that have been bought."

There are a number of phases of the history of medicine and surgery about this time of which we find very little record, except in the satiric poets. Certain procedures were so common that they did not attract attention enough to be mentioned in scientific books or books of serious history, and fortunately for us they have been preserved in the satires. We would not have been sure, for instance, that clinical or bedside teaching was used in medicine in Rome during the first century after Christ, for we have no formal records of it, only that Martial declares that one old man refused to call a particular physician to

see him because that physician used to bring with him a troop of students whose cold hands, while they pawed him over for diagnostic purposes, always gave the sensitive patient a chill. Martial has told us about the peculiarities of the people and so has preserved many historical phases for us. It was he who first voiced for us that the reason why a particular lady's locks were black was not that she dyes them black, but that she buys them black. With regard to a certain lady's teeth and why they were white, though those of another lady of the same age were black, Martial says that the second lady had her own teeth but the first lady had bought some new ones. All this points to a very common use of artificial teeth and dentures of a number of kinds.

According to tradition great care was taken of the teeth among the Romans, and there were all sorts of dentifrices, with fashionable and high-sounding names, and people who had nice white teeth kept showing them on all occasions and the smilers were people who were rather proud of their teeth. Catullus has a satire in which he excoriates the silliness of a foreigner in Rome, one of the *nouveaux riches,* who having made a fortune in Spain had come to Rome to live and who spent his time caring for his person and practising how to show his teeth. The poet reminds him that according to tradition the mode of keeping the teeth clean in old Spain was not very pleasant to think about (horse urine is said to

have been used as a mouth wash) and that he better remember and keep his white teeth to himself.

As might be expected, Petronius, the *arbiter elegantiarum,* has something to say about toothpicks, which were usually made of wood, lentisc wood being the favorite, though quills were also used, but the elegants of Rome used silver and gold toothpicks. Very often these were of such a form that one end was used for removing wax from the ear by a sort of spoon-shaped extremity and the other was sharpened for toothpicking. The instrument was called a dentiscalpium. Occasionally a series of toilet articles were fastened together, including a metal toothpick, an ear picker, a nail cleaner, a file, and when pivoted each could be used separately. These were worn suspended from the girdle somewhat after the feminine fashion in similar matters at the present day. The danger of picking the ear was not as commonly recognized as at present, though we must not forget that in the Latin countries even yet ear spoons are not uncommon, and the precious rule that nothing smaller than the elbow must ever be put into the ear does not hold there.

While there was no special name for dentist among the Romans or in the Latin tongue, in one of Martial's epigrams he mentions a certain Cascellius who extracts or cures diseased teeth. There is so much in Martial that hints at least at dentistry that it is hard to understand the

lack of a name for this special profession. Just as in our own time, many of the leaders of the medical profession argued against dividing medicine up into many specialties; and Scribonius Largus, who wrote on medicine about Martial's time,—he was the physician to the Emperor Claudius and accompanied him to England in the year 43,—pronounced emphatically against the multiplication of specialties, particularly into those which are occupied with but small portions of the body. No man should assume, he declared, the name of doctor simply because he knew how to treat one little portion of the body and cure a few diseases. He must be able to cure all kinds of affections to deserve that name.

We have generally been wont to think, that at least during the Middle Ages or particularly during that portion of them spoken of as the Dark Ages, there must have been very little development of such scientific and inventive genius as would be necessary for dentistry. Here too, however, our false impressions are being brought home to us very emphatically, by recent developments in historical investigation. There are historians who do not hesitate to say that as we have come to know more about the so-called Dark Ages,—their art, their science, their education, their solution of social problems, their development of the arts and crafts and above all their magnificent application of great principles to human justice,—they should be called rather the

Bright Ages. Our own John Fiske, a great American historical writer of the past generation, said that we never could be quite sufficiently thankful for all that these ages had accomplished.

Ordinarily it is assumed that at least there was very little science and no medicine or surgery worth while talking about. In my book "Old-Time Makers of Medicine" I have collected some of the facts from many sources that serve to illustrate very well how eminently fruitful the thousand years from 500 to 1,500, these are the Middle Ages and the Dark Ages, were in medicine and surgery and related subjects. We shall see that there are some interesting dental details also.

Aëtius of Amida, who flourished at the beginning of the sixth century, was the first Christian who attracted attention in scientific subjects. He wrote a medical treatise consisting mainly of excerpts from the great writers of the preceding time, but also with commentaries of his own. It is divided into four books, each containing four sections or discourses, and is therefore called from the Greek term "Tetrabiblos." He has many interesting things with regard to medicine and surgery and especially in what relates to the specialties affecting the face. He describes the removal of the tonsils for hypertrophy, the excision of polyps of the nose and evidently knew much about affections of the throat, for he describes a suffocating angina in which there are

no inflammatory symptoms, evidently our neurotic croup, the ordinary inflammation of the tonsils, acute pharyngitis and tonsilitis, a crusty infection of the tonsils (probably diphtheria), and retro-pharyngeal abscess.

He had much to say with regard to the nervous supply of the mucous membranes of the gums, tongue and mouth, and taught that the teeth received nerves through the small hole existing at the end of every root. For children cutting teeth he advised the chewing of hard objects and thought that chewing of rather hard materials was good also for the teeth of adults. For fistulas leading to the roots of teeth he suggests various treatments and if these do not succeed recommends removal of the teeth. He seems to have known much about affections of the gums and recognizes a benignant and malignant epulis. He thought that one form of epulis was due to inflammation of a chronic character and suggests that if remedies do not succeed it should be removed. His work is of interest mainly as showing, that even at this time when desire for information of this kind is usually supposed to have been in abeyance, physicians were gathering information about all sorts even of the minor ailments of mankind, taking what had been written about them, commenting on it, adding their own observations and in general trying to solve the problems as well as they could. They were facing our problems with quite as much seriousness as

we do, and the surprise is how much they anticipated some of the conclusions that we reach even with all our greater advantages and the possibilities of accumulating information during all the centuries since.

Paul of Ægina, sometimes spoken of as Paulus Æginetus, wrote such another book of medical excerpts as Aëtius at the beginning of the next century,—the seventh. He, too, has quite a little to say of the teeth. When there are supernumerary teeth he suggests their extraction, lest deformity result; he advises the filing off of teeth that project above the level of others and the scraping of tartar from the teeth.

After this the Arabians in the eighth and ninth centuries take up the dental tradition, and many of them have interesting material with regard to dentistry. None of those whom we know the best, Ali Abbas or Serapion, or Rhazes, or Avicenna,* failed to have some remarks of more than passing interest with regard to dental affections and procedures. Abulcassis is particularly complete in this matter and has been copied very freely by subsequent writers. We have pictures of the scraping instruments, the files and the forceps used by Abulcassis and of elevators of various kinds and dental saws as well as of various wire apparatuses for steadying the teeth. At no time evidently was dentistry entirely neglected and

* See chapter on Arabian Physicians in "Makers of Old-Time Medicine."

nearly always some one was doing work thoughtfully and much better than we might expect.

In the later mediæval centuries, as might well be expected by any one who knows the history of medicine and surgery at this time, some noteworthy contributions to dentistry were made. Guy de Chauliac, of whom I have already spoken, wrote a great text-book of surgery "La Grande Chirurgie," which contains a series of chapters that treat of diseases of the teeth. This has been recently republished in France and has been the surprise of the generation. He points out that the principal causes of dental decay are the taking of foods too hot or too cold and, above all, of successive foods of very different temperature. After this the breaking of hard things with the teeth was recognized as one of the most frequent causes of such destruction of the enamel as gives opportunity for the development of decay. Finally the eating of sweets and especially the sticky sweets was recognized as an important source of caries. The teeth were supposed to be cleaned frequently and not to be cleaned too roughly. Roughness would do more harm than good. Guy de Chauliac suggests that operations on the teeth are special and belong to the *dentatores* or dentists. Physicians, however, he thought should know the general principles of the dentist's art in order to be able to judge of the advisability or necessity for dental operations. He says that the *dentator* must be provided with appropriate

instruments, among which he names scrapers, rasps, straight and curved spatumina, elevators simple and with two branches, toothed tenacula and many different forms of probes and canulas, as well as a number of small scalpels, tooth trephines and files.

He recognized the necessity for freeing the teeth from tartar, which he called hardened limosity or "liminess" (limosité endurcie). This could not be removed by any ordinary washing or scrubbing and there were various instruments, rasps and spatumina, that should be employed for this purpose.

He seems to have understood the principles on which decay occurred in the mouth. He wishes as far as possible to prevent it. He knew that in wounds he prevented the occurrence of various forms of toxic processes by the use of wine, and it is not surprising then to find that he recommends rinsing of the mouth with wine as a precaution against dental decay. A vinous decoction of wild mint and of pepper he considered particularly beneficial, though he thought that powdered dentifrices should also be used. He gives the formulas for some tooth-powders which, while more complex than ours at the present time, contain most of the ingredients that are used in our tooth-powders now.

Chauliac knew, however, that teeth would sometimes have to be removed and, while he recommends saving them as long as possible, he sum-

marizes the indications and the methods for the extraction of teeth and the removal of fragments and roots. He rejects at once certain applications to gums which were said to bring about the dropping of the teeth without recourse to instrumental extraction. While much is claimed for these methods he has never seen them work in practice and he distrusts them entirely. Teeth are only to be extracted if they give the patient continuous distress.

When teeth become loose they should be fastened to the healthy ones. If the teeth fall out they may be replaced by the teeth of another person or with artificial teeth made from ox-bone which can be fixed in place by a fine metallic ligature. He says that such replaced teeth may be serviceable for a long while. This is of course a rather short dismissal of this important department of dentistry, but it must not be forgotten that Guy de Chauliac's interest was in general surgery and his short chapters on dentistry were written only to make his text-book complete. Evidently his contemporaries knew much on the subject and practised many more details of what we would be likely to think of as modern dentistry than we have had any idea of. Chauliac died about 1365. He had been the official physician of the Popes at Avignon, had studied down in Italy, and his text-book of surgery recently republished in France makes it clear that there is nothing in modern surgery of which he did not have a

good idea by anticipation. He used anæsthetics, employed wine as a dressing in wounds and got its antiseptic effect, operated within the skull, within the thorax and the abdomen, invented a special operation for the radical cure of hernia (for which he used an exaggerated Trendelenburg position), insisted that all wounds of the intestines have to be closed or the patient will die and invented a number of special instruments. He had received his education in many places, espe-

FIG. 10.—The pelican as represented in Giovanni d'Arcoli's work. *Forceps pro extrahendis dentibus pulicanum dicta.*

cially at Bologna, and was famous in his time for his knowledge of anatomy. His anatomy of the teeth is rather defective but in surgical anatomy there was little that he did not know. With all his knowledge of surgery it is no wonder that he talks such straightforward practical commonsense with regard to dentistry as he does with regard to so many subjects.

There is another great contributor to dentistry in the next century, the fifteenth, to whom a special chapter is devoted in my "Old-Time Makers of Medicine." * This was Giovanni of Arcoli, sometimes known as Arculanus. He was a professor of medicine at Bologna in the first half of the fifteenth century whose reputation secured him

* Fordham University Press, New York, 1911.

a call to the University of Padua, then the most famous of Italian Universities, and finally at Ferrara, where the D'Estes were trying to bring the university of their capital city into prominence. Gurlt, in his great work, the "History of Surgery," says that "while Arculanus' name is scarcely known—he is usually considered just as one of many obscure writers of the Middle Ages —his writings deserve a better fate."

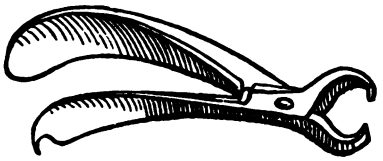

FIG. 11.—Dental forceps (Giovanni d'Arcoli). *Forcipum pro extrahendis dentibus forma.*

We owe to him an excellent description of insanity, some very interesting practical hints with regard to the treatment of conditions in the throat and nose and finally some chapters on dentistry in which, as Guerini says in his "History of Dentistry," * "the subject is treated rather fully and with great accuracy." He had much to say, particularly with regard to the preservation of the teeth. He suggested various modes of filling the teeth, and the careful washing out of the cavities with wine before the filling was placed in position.

His successor among the great writers on surgical subjects in Italy was John De Vigo, a Papal physician, to whom we owe what is prob-

* Philadelphia, Lea & Febiger.

ably the earliest treatise on gun-shot wounds. He treated conditions of the teeth very practically. Abscesses of the gums should be treated as other abscesses, that is encouraged to come to maturity and then opened. If they do not close promptly an irritant Egyptian ointment, containing verdigris and alum among other things, should be applied. His remarks with regard to the filling of the teeth are brief but to the point and they come evidently from a man thoroughly

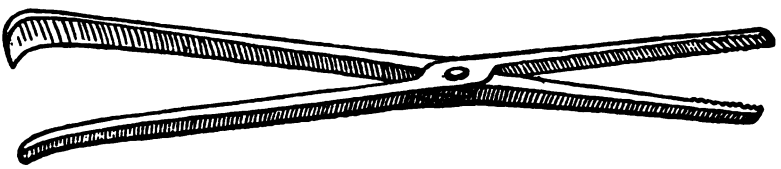

FIG. 12.—The forceps called "stork bill" as represented in Giovanni d'Arcoli's work. *Forceps pro extrahendis fragmentis quod Rostrum Ciconiae dicent.*

accustomed to the procedure he described. He says: "By means of a drill or file the putrefied or corroded part of the tooth should be completely removed. The cavity left should then be filled with gold leaf."

John De Vigo is really one of the great surgeons of the Renaissance, which is usually thought of as the beginning of modern time. About the middle of the sixteenth century came Eustachius' contributions to the anatomy of the head and his "Libellus de Dentibus" is a distinctly scientific contribution to anatomy. It has been said that, so far as the macroscopic anatomy of the teeth is

concerned, very little was left to be done after Eustachius' time. In the course of the seventeenth century the microscope was introduced and applied to human tissues, and Leeuwenhoek in 1678 discovered and described the tubular character of dentine. Scientific dentistry acquires a definite place and it is not surprising to find that in 1700 France instituted special examinations for dentists. Fauchard in 1723 published his book the "French Dentist," in which it has been said that he discusses nearly everything that the modern dentist attempts. For filling teeth he used lead and tin, but preferred the tin because the lead blackened. Gold may be used but it is expensive, and tin is just as good unless the patient specially desires gold. He talks about pivot teeth, discusses the various kinds of artificial teeth to fit the various types of patients, and gives explicit directions for transplanting teeth. It was a full century after his time before our American dentists began to develop that great mechanical skill which gave so many refinements to dentistry, but above all rendered scientific and thoroughly skilful dentistry available for all those needing it.

In the past genius frequently lifted itself above its time and anticipated much of our modern progress, and the wealthy and those in influential positions could secure such dental relief as enabled them to make up to a great extent for dental deterioration. Now good dentistry, thanks

to American enterprise, is an art easily learned, though requiring skill, and knowledge is readily available for the benefit of all the people, poor as well as rich. It is in this rather than in actual discoveries or inventions that our advance in dentistry can be measured. Even what seems newest in dentistry can often be traced to old times. This is only what is true, however, with regard to every phase of human art. Whenever men have seriously set themselves to solving problems of the application of their knowledge for the benefit of other men they have succeeded in solving them, in principle at least, about as well at any one time as at any other, no matter what the date in history. It is not evolution that counts but men's determined efforts to do a particular thing at a particular time as well as possible. Therefore I think that my review for you of how old the new in dentistry is, instead of being considered pessimistic, should rather be looked upon as an essay in optimism. I know how deeply interested is the Pennsylvania State Dental Society in improving the art and the practice of dentistry in every possible way. There is no doubt from the lessons we glean from history that their efforts will be successful; and so we can look for important developments in our time, because not a few, but a very large number of highly intelligent and thoroughly trained and skilful men are intent on bringing about progress in dentistry.

PRONUNCIATION OLD AND NEW

Shakespeare's Pronunciation and the Irish Brogue

"Speak the speech, I pray you, as I pronounced it to you."
—*Hamlet.*

"Let me entreat you speak the former language."
—*Measure for Measure.*

"Speak scholarly and wisely."
—*The Merry Wives of Windsor.*

"Speak for yourselves; my wit is at an end."
—*Love's Labor's Lost.*

PRONUNCIATION OLD AND NEW*

(SHAKESPEARE'S PRONUNCIATION AND THE IRISH BROGUE)

PERHAPS nothing illustrates better the vicissitudes of pronunciation in English than a study of what is called the "Irish brogue"—that method of pronouncing English which distinguishes people born in Ireland from those in other English-speaking countries. It is more than mere pronunciation, however, that differentiates Irish English. There are many quaint forms of speech and some expressions and usages that are distinctive. This lingual mode, for it is scarcely to be called a dialect, is usually presumed to be a deterioration of language due to lack of education and contact with legitimate sources of English. It proves after a little study to be a preservation of the old method of pronouncing English, which has come down to a great degree unchanged in Ireland from Shakespeare's time.

It was during Shakespeare's life in Elizabeth's time that the English language first gained a firm

* The material for this was gathered for an address at the dinner of The Principals' Club of New York City, under the title "A Survival of Elizabethan Speech." It was published in *Harper's* for July, 1911, but has been considerably enlarged for the present publication. Thanks are due the editors of *Harper's* for courteous permission to republish.

foothold in Ireland. The neighboring island had been annexed under Henry II, and a number of Anglo-Normans had taken up their residence in it; but instead of introducing their own language they had adopted that of the Irish; and indeed, as has been often said, these families, who include the Burkes and all those whose family names begin with Fitz and many another that is now thought distinctively Gaelic, became more Irish than the Irish themselves. Even much later immigrants from England adopted Irish as their spoken language.

In Elizabeth's time, however, it came to be realized that if there was to be any real consolidation of the two countries, then the Irish language must be supplanted by English, and a definite effort in this direction was made. This change of speech, resented and resisted, was nevertheless successfully accomplished all over the island, except in the west, within a decade after Shakespeare's death. Mr. Douglas Hyde, in his "Literary History of Ireland," says that "in 1627 one Connla Mac Echagan, of West Meath, translated the Annals of Clonmacnois into English. In his dedication he states as the reason for the translation that 'many families now choose rather to put their children to learn English than their own native tongue, so that their posterities are like to fall into more ignorance of many things which happened before their time.'"

When the very annals of ancient Ireland and

its educational institutions were being translated into English lest the rising generation should not know them, it is easy to understand that there must have been a widespread absorption of English in the sister island. This fact takes on a new significance when we study what we now call the Irish brogue in connection with what is known to have been the pronunciation of English at that time. The two are found to conform in practically every respect. Irishmen pronounce English as their forefathers learned it; and have preserved its pronunciation because they have been away from the main current of English speech variation ever since.

To take the vowel sounds first, perhaps the most characteristic Irishism, and what is usually presumed to be the most flagrant example of ignorant mispronunciation, is the way that the Irish, especially in the country districts, say *yes*. Almost invariably they pronounce it *yis*, as if it were spelled with an *i* instead of an *e*. At the beginning of the seventeenth century, however, and indeed for two centuries later, all English-speaking people pronounced this word just this way. In his charming little book on "The Standard of Pronunciation in English," Professor Lounsbury says: "Nearly all eighteenth-century orthoepists pronounced *yes* as if it were spelled *yis*. Indeed, Walker took the pains to assure us that while it was a mark of incorrectness and vulgarity to give to *yet* the sound of *yit*,

the best and most established usage gave to *yes* the sound of *yis*. *Yit*, thus reprobated, was undoubtedly a survival of what was once good usage. The triumph of *e* over *i* in its pronunciation merely preceded its later triumph in *yes*." *

This encroachment of the sound of *i* upon *e* was very common in all English words at that time, nor indeed have we entirely got away from the influence of this tendency at the present time. Examples are not hard to find. Of course we all say a young woman is *pritty*, except some very affected people who insist on declaring her *pretty*. No one would think of pronouncing the very word *English* with an *e* sound at the beginning of it. Now as of old we talk about *Inglish*, of course. Most people say *wimmin* and not *wimmen*, though the latter sound is asserting itself more and more. It is not surprising, knowing as we do about the encroachment of *i* on short *e* in the olden time, that Irishmen con-

* The pronunciation of the second part of his expression when an Irishman says, yes sir, is usually supposed to be characteristically Irish. Ordinarily it is represented as yis sorr. An Irishman actually pronounces his r's, especially when they are terminal, and as most people do not, his pronunciation has to be represented by a doubling of the *r*. The sound that precedes and represents the *i* is not *o*, however, but one of the sounds of *a*. It is very nearly that heard in the word saw. Though seldom realized, in America particularly, *i* before *r* often has a tendency in good English pronunciation to take on an *a* sound. Only the Irish now pronounce such words as girl properly. Many people in this country say gull. In the slums of the cities they say goil. Many English people, even educated Englishmen, say guyurl. A Dublin Irishman says, with a distinct *a* sound in it, gairl. There is a tradition that the best pronunciation of English in our time is to be heard in Dublin.

tinue to say *min, pin,* and *sind,* instead of *men, pen,* and *send.* They do so not from ignorance, however, but conservatism.

The preservation of a similar tendency to the encroachment of *e* upon *a* is to be noted in many Irishisms, some of which are shared by most English-speaking people. An Irishman is likely to say *ketch* for *catch,* and in proper names he says *Welsh* for *Walsh,* and with the rest of the world, of course, says *reddish* for *radish,* though the *a* sound is said to be coming into use as the more elegant pronunciation of the word. On the other hand, the *e* sounds by a sort of compensation, as it were, were often changed to *a,* especially when they occurred before *r.* An Irishman still says *clark* for *clerk,* and *clargy* for *clergy,* but all the world did that in the seventeenth and eighteenth centuries; and some of these *a* sounds for *e* are still retained in such words as *Derby* and *Berkley.* Only the Irishman, however, still says *sarpent,* though with the history of English pronunciation before us it is easy to understand why.

Other characteristic vowel sounds used by the Irish can be traced far back in our English speech. For instance, the Irishman from the country districts of Ireland still talks about *goold* for *gold.* This is supposed to be a significant index of degeneration of speech and ignorance on the part of the speaker. This very pronunciation *goold* was so common in England when Walker wrote his pro-

nouncing dictionary that that lexicographer, in the words of Professor Lounsbury, "looked upon it as a disgrace to the language that indolence and vulgarity had thus been enabled to corrupt the *o* into the sound it then had. Still, he deemed it too firmly entrenched ever to disappear." This curious sound of *o,* as it would seem to us, will not be so surprising, however, if we recall that even the word ***Rome*** was in the olden time pronounced as if it were spelled *room.* In "Julius Cæsar" Shakespeare represents Cassius as punning on the word ***Rome,*** using *room* for the other term of the pun:

"Now is it Rome indeed and room enough."

Walker in his dictionary declared, though as in the case of *goold* it manifestly pained him to make the admission, that the *o* of ***Rome*** seemed irrevocably committed to the sound represented by the *o* in the word *move.* The *oo* sound of *o* is not nearly so unusual as we might think; *lose* is a typical example, but it would not be difficult to point out others. To pronounce ***Rome*** as *room* seems utterly foreign to the spirit of English pronunciation until such familiar words as *whose* and *to,* those stumbling-blocks, in spelling, for the foreigner are recalled. This pronunciation extended to many other words in the seventeenth century. There is a notable tendency now to pronounce words that should have a pure *u*

sound with the same sound as is given at the present time to words in *oo*. Young folks are likely to say *bloo* for *blue* and *noo* for *new*. My old grandmother, who came from one of the very backest of the "back districts" in Ireland, but who prided herself not a little on the purity of her pronunciation of English sounds, used to say *blu* exactly as if the *u* sound in it were the same as we give to *you*. Words in *ew* also had wonderfully pure *u* sounds in her mouth, which her grandchildren sometimes found it hard to imitate perfectly.

It is with regard to the diphthongs, however, that the Irish sin most mortally if we are to accept the modern canons of pronunciation as absolutely final. Every self-respecting Irishman is likely to say that he *resaves* a favor instead of *receiving* it, and in every other word in which *ei* occurs after *c*, and is usually pronounced long *e*, he utters the long *a*. As a matter of fact, *ei* is normally in English pronunciation, so far as anything can be normal in so changing a mode, long *a*. No one ever thinks of pronouncing *rein* or *vein*, or *feign* or *reign*, or *eight* or *freight*, or any of a dozen other words that might be named, in any other way than with a long *a* sound. This was true also in the words *receive, deceive, conceive*, etc., until the eighteenth century, when, to the disgust of a number of very intelligent people, some simpering city folk began to change the fine old-fashioned long *a* sound for the long

e. In spite of the opposition of those who thought they knew better and who set themselves firmly against the new movement, the simper maintained itself, and all the world now indulges in it, except the Irishman, who, having been out of the current of vicissitudinous English pronunciational variation, still maintains the habit of his fathers and of all the English forefathers.

Another flagrant example of Irish pronunciation, a very stigma of the brogue, is the Gaelic custom so well represented by the anecdote told of the Irishman who, being asked which he preferred, *neether* or *neyther,* said that *nayther* would do. At least in this combination the pronunciation of *ei* as long *a* would seem surely to be quite out of the question on any good English grounds. In this regard it is interesting to revert to what Mr. Richard Grant White had to say many years ago with respect to the pronunciation of just these words. He considers that the Irish pronunciation has complete warrant in the history of the language. He said: "The analogically correct pronunciation of these words is what we call the Irish one, *ather* and *nather;* the diphthong having the sound which it has in many words in which *ei* is, and apparently has always been, so pronounced—*weight, freight, deign, vein, obeisance,* etc. This sound, too, has come down from the Anglo-Saxon times, as we have already seen, the word in that language being *ægther;* and there can be no doubt that in

this, as in some other respects, the language of the educated English Irishman is analogically correct, and in conformity to ancient custom. His pronunciation of certain syllables in *ei* which have acquired in English usage the sound of *e* long, as, for example, *conceit, receive,* and which he pronounces *consayt, resayve,* is analogically and historically correct. *E* had of old the sound of *a* long, and *i* the sound of *e,* particularly in words which came to us from or through the Norman French."

Other diphthongs can be illustrated quite as strikingly. Of course the Irishman says *tache* and not *teech* when he wants to imply that he is talking about the giving of instruction. Even in Pope's time, however, *ea* was very frequently if not commonly pronounced long *a.* We have the well-known couplet:

> "And thou, Queen Anna, whom four realms obey,
> Dost sometimes counsel take and sometimes tea" (tay).

There are many other examples that show that this was the common pronunciation of the *ea* during the preceding century. Shakespeare's tendency to make puns has enabled us to know just how vowel diphthong sounds were rendered in his time. One of them helps us in this matter of *ea.* In the speech of Leontes to Paulina, when in the second scene of the second act of "The Winter's Tale" she fails to persuade him to give up his

foolish jealousy of his wife and recognize her child as his, Leontes calls her

> "a callat,
> Of boundless tongue, who late hath beat her husband
> And now baits me—"

The force of the manifest play on the words *beat* and *baits* would have been entirely lost only that the two diphthongs were sounded in the same way.*

In Mr. Ellis's table of vowel and diphthongal pronunciations in Shakespeare, as quoted in Fleay's "Manual of Shakespeare," *ea* is said to have been pronounced commonly in the time of the dramatist as *a* in *mare,* rarely as *e* in *eve,* very rarely as *a* in the French word *chatte,* and occasionally as *e* in *met.* With regard to *ei* Mr. Ellis says that it is usually pronounced as *ey* in *they*

* There are a number of supposed Irish English pronunciations sometimes represented by the curious spellings of writers who think that they are reproducing Irish phonation that no genuine Irishman ever uses. We so often hear them from the stage on the lips of would-be comedians, who think they are imitating the Irish brogue, that we Irish know this particular dialect as "stage" Irish. Because the two familiar *e* sounds of the diphthongs *ei* and *ea* are pronounced long *a* by the Irish is no indication at all, though apparently often assumed to be, that they cannot pronounce *e* sounds, or at least that they have an inevitable tendency to substitute long *a* sounds for them wherever they occur. No Irishman ever says praste for priest, though he is often represented as so doing by ignorant writers of what is supposed to be the Irish dialect. Nor does he say belave for believe, though he does say consave for conceive. Nor does he say besache for beseech, though, of course, he says, according to the genius of the language, tache for teach. I have had an Irish jarvie say to me just after he had said "By your lave, sir," "I had just

or as *a* in *mare,* and only rarely as *ay (eye).* To revert to *ea,* there are of course two vowels in it, and the question that has always disturbed pronunciation has been which of these should predominate. Long ago the *a* predominated, and even at the present time the *a* sound is much more heard than is the *e.* For instance, in such words as *heart* and *hearth* the *a* is persistently maintained. During the seventeenth century the rules for pronunciation were quite unsettled, but the tendency was rather to emphasis on the broader vowel sounds than on the slenderer ones. Fleay says, "The fact of the matter is that especially during the last quarter of the sixteenth and the first quarter of the seventeenth century the English pronunciation was less fixed than almost at any other time in its history." Spelling also was very uncertain, and men spelled and pronounced with

as lief, sir," and he had no nonsensical idea that he was saying I *would* just as lief. The juxtaposition of the two sounds was so striking as not to be easily forgotten, and each was positive and clear cut. It is not because the Irish cannot say *e* long when they wish to, but because they prefer to employ other sounds following the usage of their people, which is a survival from the best traditions of Elizabethan and Jacobean traditions, that they use a fine long *a* sound where others pronounce *e.*

An Irishwoman runs a same (seam) but she would scarcely know what was meant if someone said to her it sames (seems) to me. A rame (ream) of paper is Irish English, and so is a tame (team) of horses, but it is a pleasure to hear the full long *e* sound that an Irishman uses when he says that it is teeming rain. The Irish have preserved the old plural form of the personal pronoun of the second person, ye, as manifest evidence of their respect for *e* sounds where they occur legitimately. They are sometimes laughed at for it, but I need not say what good old-fashioned English it represents.

no idea of following rules, but quite satisfied if only they were understood. There are some among us at the present time who might sigh for that precious era when one could pronounce as one pleased and spell as one pronounced.

The Irish pronunciation of *ou* in many words appears to many hopelessly degenerate or at least dialectic. When an Irishman says *soul* as if it were spelled *sowl* it seems sure to most English-speaking people of our time, that he has perverted a good English pronunciation into an almost unspeakable Gaelicism. It will be all the more surprising then to find that he has really only conserved the old-fashioned English pronunciation, not only of Shakespeare's time, but of centuries before and after. In Elizabeth's and James's time the word was actually often spelled *sowl*. Orthoepy and orthography had many more direct relations then than they have now, and the sound of a word often influenced its spelling away from its etymology. There are many words in English of the present day, however, in which *ou* is pronounced as the Irishman pronounces it when he says *sowl*. The very words *pronounce* and *sound* furnish typical examples. For a long time the word *wound* was dubious and the poets at least by poetic license used it to rhyme with *ground* and *found*. It is only a century and a half ago since this pronunciation, even in ordinary speech, began to be antiquated. We still talk about a *rout* though most of us cling to the

French pronunciation for *route* in spite of the fact that Walker, over a century ago, declared that this word was often pronounced so as to rhyme with *doubt,* "by respectable speakers." The Irish pronunciation of *sowl* seems very queer so long as we do not think of these words and of such others as *our, flour, hour, out, about, scout* and all the other frequently used words of similar sound that might be so readily mentioned. As a matter of fact, when the Irishman says *sowl* he is only following a usage that has very few exceptions.

Indeed most of these exceptions are comparatively recent. Lounsbury, in his "English Spelling and Spelling Reform," * after discussing *wound* and *route,* says (p. 155):

"A far more interesting case is that of *pour.* The majority of eighteenth century orthoepists—Johnston, Kenrick, Perry, Smith and Walker—pronounced the word so as to rhyme with *power.* Spenser so employed it. So did Pope, more than a century later. In the only two instances he uses the word in his regular poetry at the end of a line it has this sound. In his 'Messiah' occurs the following couplet:

> "Ye Heavens! from high the dewy nectar pour:
> And in soft silence shed the kindly shower."

Walker, indeed, declared unreservedly that the

* Harper's, New York, 1909.

best pronunciation of it is "that similar to power." Nares alone among eighteenth-century orthoepists seems to have upheld what is now the customary pronunciation; yet even here the authority of some of the greatest of modern poets has been occasionally cast in favor of the once accepted sound. In his poem of "The Poet's Mind," Tennyson, for instance, writes:

> "Holy water will I pour
> Into every spicy flower."

Tour is another word of the same combination of letters that has had similar vicissitudes. Many will doubtless remember a time not so long ago when bride and groom went on their wedding tour (tower). They still do so in country places and in the *mouths* of their Irish friends.*

* As has often been noted *ou* is a pronunciation trap for the foreigner, and there is no rule that can help him in the slightest. Confusion has grown worse confounded since Shakespeare's time. There are now no less than six sounds for it. It is pronounced long *o* as in soul, long *u* as in you, short *o* as in cough, short *u* as in would, and a still shorter *u* as in country, and broad *a* as in wrought. It seems a very simple thing to pronounce a word with *ou* in it until we begin to think about what is our English rule for its pronunciation. The many exceptions prove the absolute absence of a rule. While, of course, *ou* is not entirely responsible it must be held *major particeps criminis* for that awful tragedy of English pronunciation—for the poor foreigner at least—that is represented in the combination *ough*. Here we have no less than six sounds and, perhaps, even a seventh. The familiar phrase embodies them all, "though the rough cough and hiccough plough me thoroughly through."

Some Irish English pronunciations of similar sounds to *ou* in wound seem particularly disturbing to English and Americans because apparently they think that they bear with them special marks of ignorance. I remember once, after talking of the Irish brogue

With regard to the Irish pronunciation of the consonants, practically the same thing is found to be true as for the vowels and diphthongs. Certain consonantal differences in Irish English, that are usually set down as due to ignorance or at least to provincialism, are really vestiges of the Shakespearean pronunciation of English. The most prominent of these are concerned with the addition or the suppression of *h* in the middle and end of words. The Irish have very little difficulty with *h* at the beginning of words. They occasionally drop it in the middle of words or at the end, while occasionally they insert it following a *t* or a *d* where it does not exist. A typical example is *murther* for *murder,* and another *shoulther* for *shoulder.* For this usage there is excellent warrant in Shakespeare, and it is generally conceded that this was the accepted pronuncia-

as representing the Elizabethan or Shakespearean pronunciation, a lady school principal said to me: "But why do the Irish say *door* and *floor* with a short *u* sound as in *rune* or *dune* instead of the normal long *o*?" I replied that according to tradition an Irishman had the privilege of answering a question by asking another, and that he might well ask why she said poor and moor and moon and loon and coon and soon and boon and moot and boot and soot and all the other double *o's* in the English language exactly as the Irishman pronounced them in door and floor. There are only very few exceptions to the rule by which the sound of *oo* is pronounced like short *u* and those exceptions crept into the language comparatively recently, and the Irishman refuses to break the rule for the sake of such modern exceptions—degenerations of speech as he might rightly term them, for they are irregularities. Until attention is called to the other sounds it seems the height of ignorance to pronounce door and floor in the Irish fashion, but once the story of English pronunciation of this combination is properly recalled, the feeling is quite different.

tion in Elizabeth's and James's time. For certain omissions, as for instance in the word *nothing,* often pronounced *nawtin* by those of the Irish who have most faithfully preserved the old-time pronunciation and who have most of the brogue, there is also justification in the old time. Without some such suppression of the *h* the pun that is well known to occur in the title of Shakespeare's "Much Ado About Nothing," which is also Much Ado About Noting [*i. e.,* Hero's actions], would be lost.

At the end of words the omission of *h* is well illustrated in the familiar Irish expression "the old earth," which means the old land, a term that is often affectionately used by the Irish in speaking of their native land. One old Irishwoman refused to believe that she could go to heaven in happiness unless the road thither led through what she called in her pronunciation the "owl dart." Her expression illustrates a number of phases of Elizabethan pronunciation. In the first place the *o* of *old* was pronounced *ow,* for *o* was very unsettled in its pronunciation, and before *ld* usually took this *ow* sound. Richard Grant White, for instance, does not hesitate to say that *soldier* was pronounced *sowldjer* at this time. Secondly, when two consonants occurred at the end of a word and the next word began with a vowel sound, in old-fashioned speech the final consonant was carried over to the next word, so that it was rather hard for one unused to the language

to recognize just where the division of words really was. This has made this colloquial expression "*the owl dart*" a puzzle to even many of the Irish themselves. As for the pronunciation of *earth* as *art,* it is only an example of the *a* sound predominating, as in *heart,* and the final *h* is suppressed. This suppression of final *h* was rather common among the Irish, who, for example, said and still say *wid* for *with,* and even *widout* for *without.*

Another consonant that is often suppressed by the Irish is the *l* in certain words. An Irishman is likely to say, "Well, it is your own faut." In this, however, he is following the genius of the language rather than modern customs. There are many words in which *l* is thus suppressed normally in English, and Professor Lounsbury notes that in such words as *half, folk, calm,* and *walk,* as indeed practically whenever *l* is followed by *f, k,* or *m,* it is suppressed. Everybody suppressed it in *fault* until the end of the eighteenth century. As a matter of fact, the *l* had been originally absent from the spelling, for our word came to us directly from the French *faute.* During the seventeenth century the *l* was adopted into our spelling, but did not get into our pronunciation for a full century later. Pope and Swift regularly rhymed it with words like *ought,* and *brought,* and *thought,* and *taught.* Even so recently as Dr. Goldsmith's time we find such rhymes in the "Deserted Village" (1770) as

aught and *fault,* and at that time it was probably a perfect rhyme. Samuel Johnson in his dictionary says that (in his time) "the *l* is sometimes sounded and sometimes not. In conversation it is generally suppressed."

There is another interesting feature of the pronunciation of English by the Irish which recalls the changes that have taken place in the vocalization of our English speech as a consequence of certain changes in the habits of many people in our more matter-of-fact modern times. There is a distinct tendency of late years to throw the accent back as far as possible in the pronunciation of long English words, thus making it more and more difficult to use the language to advantage in public speaking. Oratory has gone out among most of the English-speaking people, and this is doubtless the principal reason for the ready acquiescence in the unfortunate habit of placing the accent far from the ends of words, which makes it so trying to the public speaker to secure the ready hearing, at a distance, of the final syllables. The Irishman is still a born orator, however, and so he has not yielded to any great extent to this tendency. He still accents many words on the penultimate syllable which we Americans and the English accent on the antepenultimate. In so doing, however, the Irishman is maintaining the old-fashioned pronunciation. He says *contráry,* of course, but so did Shakespeare.

The Irishman says *demónstrate* and *contémplate,* but he also accentuates the penult in cases where most of us are accustomed to hear and to use the antepenultimate accentuation. It must not be forgotten that in this case he is following the old-time method of pronunciation. There are some very surprising things to be found in this matter. Professor Lounsbury calls attention to what the poet Rogers had to say with regard to the throwing back of the accent in these long words. Few men were better situated than Rogers to know how the intellectual people of England pronounced their own language. At his table most of the wits and writers assembled, and he was familiarly acquainted with them. He was quite indignant over the antepenultimate accentuation in words that now seem to us almost impossible of pronunciation any other way. He said: "The now fashionable pronunciation of several words is to me, at least, offensive; *cóntemplate* is bad enough, but *bálcony* makes me sick." Professor Lounsbury adds: "At the present time it would produce a similar nauseating effect upon many to hear the accent fall upon the second syllable of this last word, as was once the usual practice." Rogers's expression, however, should form ample justification for the Irishmen who insist on clinging to the accent on the penult in so many words, though words pronounced in that way, such as *magístrate, certificate, interpréter* are quite as disturbing to many

as Rogers's *balcóny*. The oratorical effectiveness of such placing of accents can be seen very well in the vocal difference between *prédatory* and *predátory* wealth.

The Irish have some rather interesting peculiarities in the use of verbs, which, like everything else in their speech, are prone to be considered stigmata of degeneration, at least, if not worse. These peculiarly Irish verbs and favorite Irish forms of verbs are really representatives of good old English expressions. Most unsophisticated Irishmen will use the expression *afeared* instead of *afraid,* though contact with English-speaking people of other countries soon diverts them from it because of the ridicule that attaches to its use. *Afeared* is, however, the most familiar form of the verb meaning "to be afraid" extant in Shakespeare's time.

I have heard a dear old Irish priest criticised as ignorant for saying that he was *afeared.* His critics were quite sure that it was ignorance. For them *afeared* was a degenerate form of *afraid* that had been manufactured in the mouths of ignorant Irish people who knew nothing of the genius of the language. Shakespeare, however, uses the form *afeared* no less than thirty times. It occurs in his labored and perfect plays like "The Tempest," in his Roman plays as "Julius Cæsar," in the melodramas at the end of his career as in "Cymbeline," as well as in the English history plays and "Midsummer Night"

and "Romeo and Juliet" at the beginning of his career. *Afraid* is used more frequently but not much more frequently. Indeed it seems likely that there was no distinction between the words and that the particular form of the spelling depended on the typesetter. *Afraid* was just coming in. *Afeared* had been the older form. The question itself is of little importance, but what is important to realize is that it is extremely dangerous to criticise the use of English expressions unless one knows something about their origin. The Irish priest criticised for ignorance was using a fine classical form of the verb. He was doing so because that was the form he had heard used in his boyhood, but it so happened that his environment was an excellent preservative of the genius of the language.

When an Irishman says *forninst* most people are very sure that he is using a Gaelicism or at least a degraded form of English speech. As a matter of fact he is using a fine old-fashioned English preposition, written in old times *forenenst* and still very commonly employed in Scotch and English dialects as well as by the Irish. The word was formed from the two parts *fore* and *anent,* meaning over against or opposite to. The Century Dictionary quotes from the "Acts of James VI," Scotland, who was afterwards James I of England, in time the last decade of the sixteenth century, "*utheris* inhabiting the *bordouris fore-anent* England." When Fairfax

published his translation of Tasso, he translated one line:

"The land forenenst the Greekish shore he held."

Of course the Irishman pronounces his short *e's* like *i's* whether it be in *yis* and *yit* or in *pretty* or *women,* because that is the old fashion. He also shortens the *o* so that it sounds not unlike short *u,* and accordingly we have *furninst.* It is really an expressive word and one for which we have no exact equivalent.

The same thing is true of a number of other Irish words which are not so familiar. A very common expression among the Irish is, "It is mizzling," meaning that it is drizzling. The verb *to mizzle* is a good English word that was in very common use two centuries ago.

There are certain tense forms employed almost exclusively by the Irish now, so that they are supposed to be characteristically Gaelic, though they really represent fossil forms of English tenses no longer in common use. Some of them, indeed, are very significantly expressive, so that it is too bad that they have been allowed to drop out of usage, because they helped to express shades of meaning which otherwise demand roundabout phrasing. A single example will suffice to show what we mean. How often has it not been said in academic circles that we have no equivalent for the Greek aorist, and how often has this

poverty of tense expression in English not been deplored. This tense deficiency is, however, true only as far as English English goes. In Irish English the lack is not felt. Any one who has ever tried translating most of the forms of the Greek aorist after the model of the Irish expressions, "I am after doing it"—with the curious present sense that the aorist sometimes has—or, "I was after doing it," or, for certain aorist forms that have a future quality, "I will be after doing so and so," will usually find that he has a better equivalent for the Greek meaning than can be obtained by any other circumlocution, however studied it may be.

The Irish enjoy certain distinctions with regard to the use of auxiliaries as well as of verbs themselves that are worth while tracing to their historical source, because the investigation makes it clear that it is not because of any fault that their usage is different, except in so far as the clinging to old-fashioned forms, which were eminently correct in their day, can be attributed to them as a fault. For instance, there is a rather well-grounded impression that Irishmen find it much more difficult to maintain the correct usage of *shall* and *will* than do most other English-speaking peoples. According to one well-known anecdote, all of the London papers are edited by young Irishmen, only an Englishman must be kept on the staff "in order to keep the *shalls* and *wills* straight." Now it so happens

that if Shakespeare himself were to be brought before the bar of a modern strict grammarian he would probably be found guilty on many counts in this matter. The present usage of *shall* and *will* had not as yet developed at the end of the sixteenth and the beginning of the seventeenth century, when Shakespeare was writing English and the Irish were learning the language. Our greatest of writers, then, does not follow the rules which were only made after his time, and most Irishmen still talk Shakespeare's English.

In the same way, many other words that are supposed to be characteristically Irish corruptions, introduced into English by the failure of the uneducated Irish tongue to get around the peculiarities of English words, prove on closer examination to be irreproachable old English. A few examples will suffice to illustrate this, though a great many might readily be given. Most Irishmen, for instance, say *drouth,* and not *drought,* which is now the more generally accepted English word for thirst or for a season of dry weather. The Century Dictionary notes, however, that *drouth* is etymologically the more correct spelling. *Heft* is a word which is sometimes thought to be an Irishism. English-speaking people, as a rule, in England itself or in America, talk of the weight of a thing rather than the heft of a thing, but *heft* is good English and has an excellent warrant in etymology. An Irishman will sometimes talk of taking a man by the thrap-

ple, or thropple, instead of throat. *Thrapple* is a good old Anglo-Saxon expression, and is much nearer to the old word *throat-boll,* the prominent part of the throat, than our modern mutilation which employs the first syllable. *Throte-bolle* is to be found in Chaucer in the "Reeve's Tale," showing the comparative antiquity of the original form of the expression in that "well of English undefiled."

Not infrequently one finds that where there are silent letters in English pronunciation the Irish introduce a sound which shows that the letter is not entirely silent for them and that in the olden time very probably some hint of it, at least, was allowed to manifest itself. Ordinarily these pronunciations are supposed to be vulgarisms, but they are much more likely to be reversions to old modes of pronunciation and it is certainly interesting to consider them as such. For instance Irish people are prone to say "I was *frikened*" for I was frightened. The *k* sound is evidently out of deference to the presence of the *g* which is now silent, but apparently was not in the olden time. Much less frequently I have heard the sound, though I am sure I have heard it, in the word brighten. Irish servant maids often say "I was *brikening* the stove," or something very nearly resembling that in sound, in place of the more familiar word polishing.

There are many other curious pronunciations

often thought in our day to be typically Irish or at least provincial, which prove on investigation to be remnants of old-time generally accepted pronunciations. I have heard Irish people call onions *innians* and have heard them criticised as ignorant for doing so. According to Professor Lounsbury in "The Standard of Pronunciation in English," we learn from a treatise of the lexicographer Bailey published in 1726 that a then common and an apparently fully authorized pronunciation of onion was *innian.* Lounsbury adds, "This has lasted down to the present day; but long before Walker's time it had fallen, save in Ireland, from its high estate." A few Irish still talk of the cucumber as *cowcumber,* and many of them talk of asparagus as *sparrow-grass.* This last is, of course, merely a corruption for the genuine asparagus. Even as late as Walker's time, however, that English lexicographer regretted that the pronunciation of cucumber "seems too firmly fixed in the sound of *cowcumber* to be altered." While of *sparrow-grass* he said that "the corrupted form is so generally used that to employ the proper term asparagus now has an air of stiffness and pedantry."

Certain words that occur frequently in the mouths of the Irish, much more frequently than their use by others who talk English would seem to justify, prove to have an interesting history when investigated. Irishmen use *again* much more commonly than most people, and this is

usually set down as an Irishism, a corruption of proper English. It is, on the contrary, a reversion to the best days of Elizabethan and Jacobean English, as may be readily illustrated by quotations from the writers of these periods. Ben Jonson, in "Every Man Out of His Humour," says: "Bid your fellows get all their flails ready again I come," using an expression that now seems almost hopelessly Gaelic. Lord Bacon frequently says, "As much or as many again," "Half as much again," and similar phrases. Any one who thinks that the frequent use of this word by the Irish is at all due to any influence of theirs, or indeed to anything else than their preservation of the modes of English taught them in Shakespeare's time, need only look up the word *again* in a Shakespeare concordance, and see how many times and in how many different ways the great English "master of them that know" has employed it. In "Bartlett's Concordance" it will be found to occur altogether some five hundred times.

Since we are talking of the peculiar use of *again* as an adverb, which now seems to many to be a hopeless Irishism, it will be as well to take up the other sense of the word in which it is used as a preposition. The word is very rarely so employed now by English-speaking people in England or in this country, though it is very commonly used in this way by the Irish. What more familiar expression among them, for ex-

ample, than "He fought agin us," the *i* rather than the *a* being emphasized in the pronunciation? The almost universally used form of the preposition "against" is practically never employed by them. The Irishism is, however, actually purer speech than that which has taken its place. Prepositions ending in *st*, such as *against, amidst, amongst*, Professor Lounsbury notes, are corrupt forms that have crept into use in spite of the protests of the educated and the guardians of language. Some claim of euphony, real or supposed, in the terminal consonants *st* has enabled them to subsist. These words belong in the same etymological category as *onest*—if that is the spelling by which the familiar colloquial sound *wonst* may be conveyed. This latter is frankly recognized as a vulgarism. Its recent popularity seems to portend, however, that it will become in time that nondescript thing, good English, as its analogue *against* and other similar words have become. Doubtless even then the Irish peasant, especially from the country districts, will cling to the more correct form "once" as he has done with regard to "again," and will very probably be laughed at for his conservatism —which will perhaps be stigmatized as ignorance or incapacity.

The Irishman was the original spelling reformer, at least so far as pronunciation goes, if that is not an Irish bull. An Irishman says that he was "kilt entirely" and that he leapt and

knockt and stopt and tost. Those are likely to appear dialectic to the purists who oppose spelling reform, but it is very evident from the early editions of Shakespeare that such pronunciations and spellings represent the custom in his time and Professor Lounsbury points out that Spenser particularly took advanced ground in this matter and knockt, lept, lookt, nurst, pusht, stopt, and tost are to be found in a single canto. These look as unfamiliar in print as the Irish pronunciations of them sometimes seem unfamiliar because of the clear-cut way an Irishman says them. Slept and felt look all right and sound all right because we have grown accustomed to them. Feeled and sleeped would now be a shock. Doubtless a time will come when we shall revert to the simpler forms of spelling and pronunciation in this class of words which they had in the Elizabethan and Jacobean period and which the Irishman has preserved as faithfully as he has preserved so many other old-time forms of speech.

It is evident, I think, from what I have said, that the Irish brogue, far from being a degeneration of language or a token of ignorance, as it is so often presumed to be, is really only a nice exhibition of a clinging to old-fashioned ways and modes of speech, all the more admirable because clinging to anything old, no matter how good it may be, is so rare in our day. The term brogue is said to come from the word used

for the coarse shoes worn by the Irish peasantry. Their dialect, like their shoes, was supposed to be rough and suited only for themselves, a thing by itself that no one with any sense of propriety could be expected ever to use. Instead of this it proves to be fine old-fashioned English, somewhat out of date, it is true, but not the less interesting for that. It is like a good old pair of hand-made shoes which its owner may cling to even though they are unfashionable, because there is so much of comfort in them, and it is bothersome to adapt oneself to the newfangled ideas in footwear. While the many changes have been occurring in our English speech, the Irish have gone on enjoying the privilege of using the old form and preserving it for future generations to study in the life.

When the Wife of Bath in Chaucer's "Canterbury Tales" is represented as talking with something of a brogue, many people of the modern time are inclined to think that this must be because characters such as she, when put upon our modern stage, are almost invariably represented as using this broad pronunciation. There is a much better reason than this, however. It is probable that this mode of speech reproduces, more closely than any other that could well be devised, the actual fashion of talk of herself and the company. It should not be limited to her, moreover, but all the others should also have a touch of brogue.

If Shakespeare were to come back to us talking as he did in his own time, his speech, not only in pronunciation, but in many more essential characters, would be better represented by what we know as the Irish brogue than in any other way.

PATRIOTISM OLD AND NEW

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"Let all the ends thou aim'st at be thy country's, thy God's, and truth's."

—SHAKESPEARE: *King Henry VIII*, III. 2.

"Thou knowest thy country's strength and weakness."

—SHAKESPEARE: *Coriolanus*, IV. 5.

"The sunlight is not contemptible because it is common, nor were heroes like Agesilaus and Epaminondas to be despised for living in public and eating plain food."

—ST. SYNESIUS.

PATRIOTISM OLD AND NEW *

At a Pilgrims' Dinner, in Boston, some twenty-five years ago—I think it was the celebration of the Two Hundred and Sixtieth Anniversary of the Landing—the toastmaster, introducing the beloved Boyle O'Reilly as the poet of the evening, suggested that it might scarcely seem fitting for the Pilgrims to have gone so far afield for their poet for the occasion, strange that a foreigner should be chosen to sing their anniversary song for New Englanders. America should surely be rich enough itself in poetic products without appealing to a foreign country for help at such a time. He hastened to explain, however, that while Mr. O'Reilly was not born in this country he had been born in a little island off the Massachusetts coast, much nearer to this country in spirit than to any other land. The toastmaster's remarks would have even more force now than they had then, for Boston is even more Irish than it was a quarter of a century ago, for should the municipal leadership of the race ever be in dispute and Dublin no longer be the capital city by absolute right, surely Boston, as we know it, should have a place in the contest for it.

* An address delivered at the Charlestown Literary Union "Night Before" Banquet of the Anniversary of the Battle of Bunker Hill (June 16, 1911).

In asking one who is not from your own New England to talk on Patriotism on Bunker Hill Day—for as I begin my remarks I note that the anniversary will be upon us in a few minutes—there might very well be the feeling that some corresponding explanation is necessary as the toastmaster of the Pilgrims' Dinner indulged in for my compatriot. Especially would that seem to be true since the man you ask bears a name which shows that he, too, like O'Reilly, must have had in person, or through his ancestors, rather close relations with that dear little island off the Massachusetts coast.

Bearing the name I do, however, I do not feel that any apology or even word of explanation is needed, before I talk on Patriotism at a banquet commemorative of the battle of Bunker Hill. Of men of that name there were present more than a dozen at the battle of Bunker Hill, as may be seen in the Massachusetts archives in the rolls of the soldiers actively engaged. Most of these spelled their names with an *e,* but in Ireland, as indeed by the Irish in this country, the family name is pronounced Welsh, though the name is spelled with an *a.* There were a good many softenings of *a* in older English into *e* and they survive for us in such words as the pronunciation of ketch for catch, and many others that might be cited. Indeed, a great many of the family spell our names with an *e* because of this pronunciation.

On the official rolls of the Lexington Minute Men there were nearly as many of the name—eleven I believe, to be exact.

A man not on the muster roll of the battle, but who did fine patriotic work in connection with it, as indeed in all of the New England portion of the Revolution, was Dr. Thomas Welsh, a namesake as well as an honored colleague, who was born here in Charlestown in 1754. He was army surgeon to the patriots and when, on the morning of that memorable April day, "the shot was fired heard round the world," he met Dr. Joseph Warren and was told of the murderous work of the regulars, Dr. Welsh blurted out, with true Irish feeling for a square fight, "It's too bad that they've got away." "Never mind," said Warren, "we'll be up with them before night." And you will recall that they did catch up with them long before night—and to good purpose.

Dr. Welsh tended the wounded after the battle of Bunker Hill, as well as after the battle of Lexington. After Bunker Hill there was more bloody work for the doctor to repair, but with the satisfaction that it had not all been for nothing. Surely under those circumstances a Dr. Walsh, most of whose old Irish friends call him nothing but Dr. Welsh, has a right to come to you and should have, let us hope, an appropriate inspiration to talk to you on the subject of Patriotism on the anniversary of that battle.

And first as to our race in that successful revolt that separated the Colonies from England and the first important battle of which we celebrate the anniversary to-day.

It was by no accident, nor may I modestly add because of any special family bravery, that the Walshes and Welshes were so thick in the fighting of the Revolution. They had lots of good company of the same stock as themselves. There were plenty of other names that indicated that their possessors, either in person or through their ancestors, came from that same little island just off Boston Harbor, Boyle O'Reilly's birthplace. There were Collinses and Doughertys and Sullivans and Kellys and Kennys and Burkes and Sheas and Murphys and many another name that has become famous in the history of war—and of athletics—here in America and the world over, during the century since. To most of us it was a surprise to learn the truth when the contemporary documents were first published showing this. We had been brought up on an American historical tradition so strong as to make it seem quite beyond question, that New England was almost entirely peopled by the descendants of the English and that, indeed, inhabitants from any other country were so few as to be quite negligible. Palfrey, about the middle of the nineteenth century, said that the names in a Massachusetts county were more English than those of most counties in England. One does not mind Palfrey

so much because history, in his time, was written mainly from personal impressions often derived from second-hand authorities of various kinds without much care for the consultation of original documents. We had not come to realize what has since been emphasized for us by the editors of the "Cambridge Modern History" in their preface, that: "It has become impossible for the historical writers of the present day to trust without reserve even to the most respected secondary authority. The honest student finds himself continually deserted, retarded, misled, by the classics of historic literature and has to hew his own way through multitudinous transactions, periodical and official publications in order to reach the truth."

When at the end of the century, however, Senator Cabot Lodge quoted Palfrey's opinion, with entire approval, only suggesting one or two additional details, such as the arrival of the Scotch-Irish, for this race of people had been invented in the half century between Palfrey's "History of New England" and Senator Lodge on the Revolution, then one is inclined to wonder just what are these dear good New Englanders thinking about and why are they concealing from themselves, as well as from others, the part played by the men from that tight little island just off Boston Harbor in our past history. It foreshadowed what was to come so notably in Boston in our own after-time. If the names of

the inhabitants of Massachusetts were so preponderatingly English as to be almost exclusively of that people, then either the good New Englanders sent substitutes to fight for them very often, or somebody tampered with the names on the official lists of the revolutionary army more flagrantly than any list of names has been tampered with even at the most corrupt of elections in these modern degenerate days. For the official muster roll of the Massachusetts soldiers in the Revolutionary army shows every Irish name many, many times. There are Ahearns and Burkes and Costellos and Cosgroves and Conways and Connellys and Connells and Donnells, and Grogans and Hannigans and Harrigans, and Mac's and O's galore. I think there are some 120 Kellys and 80 Burkes, though only about 80 Sheas altogether. There was something the matter with the Sheas, but the fighting race was all there. There were 387 O'Briens or something like that, and Murphys without stint.

We all know how familiar such names are in New England now, though some of us who have not had the advantage of being New Englanders have to have the fact of their frequency brought home to us by actual experience. I had it forcibly impressed on me a few years ago. On the occasion of my first visit to Concord to see the sights from there to Lexington, I was rather surprised to find that the faces of a good many of the children who came to offer souvenirs for sale as

I got off the car, looked strangely familiar. For while I knew that New England had become largely Irish-American, I was inclined to think that such strongholds of Americanism as Concord at least retained, to a great extent, the American character of their inhabitants. I wandered through Sleepy Hollow Cemetery with a coterie of lads who offered to guide me to the most interesting sights, and there was a strangely suspicious familiarity about their accent. Finally I asked one of them what his name was and he said it was Connell. That name sounded familiar enough, but I recalled the fact that at a dispensary in New York City during the preceding winter I had seen a man who could not talk English well and who came to me because I could talk Yiddish and who told me that his name was Mike Connell. When I demanded how he got that name he told me that he did not want to have his foreign name and he preferred to have an American name and the Tammany Captain of his district was named Connell, so he had changed his name from Michaelevitch Konalewski or something like that to Mike Connell. Nothing could be simpler nor more American, so I still hesitated as to my lad's race.

It did not take long to find out, however. I asked my guide what were the names of his companions. He told me, I hope I remember the names right, that there was a Dolan and a Connelly and a Corcoran and a Driscoll and a

Murphy or two. They were all surely thoroughly American names. I became rather interested in the littlest boy in the crowd. He seemed to have some hesitation in telling me his name, as if he could not get around it all. His companions, however, volunteered it for me. It was Ralph Waldo Emerson McGinnis. When I went down to the Emerson house in the afternoon and Dr. Emerson kindly showed me through it I thought of the new worshippers at the shrine of Ralph Waldo who had come into New England, and I wondered whether they would take him as seriously as his own generation.

As I went back on the car to Boston I mused what a change was there, my countrymen! The home of the Puritans has become the home of the Irish immigrant and a new race inherits the traditions that the forefathers looked to have their own continue. But now that I know more about the names of those who fought at Lexington and Concord, now that I have read the muster roll of the soldiers who fought in the American Revolution in Massachusetts, and know that we were all there, "the fighting race," as we have been alas! only too often nearly everywhere, fighting for another country because we could not fight for our own, I am not so inclined to think that there is very much change; after all, certainly not nearly so much as we thought. People may be surprised at the number of Irish names in New England now but they must not forget that

their possessors earned the right to be there in the person of many a man of Irish name who fought bravely in the struggle that brought us our American liberties.

It has seemed to me that in a society where so many of the names of members reveal an origin identical with that of so many of the patriots of the older times, it would not only not be out of place to dwell on the evidence for this fact, but that it would, indeed, form a fitting introduction to a talk on patriotism. I would not have dwelt on this subject, however, only that it serves to illustrate very well, for my purpose, some interesting phases of American patriotism in its origin.

In the modern time we seem to have come to think that the patriotic love of liberty which inspired the men of the Revolutionary days was almost universal in its diffusion and nearly, if not quite without a trace of dross or selfishness in it. Our histories might sometimes lead us to conclude that a great breath of the spirit of liberty swept throughout the land, inspiring every one, surely at least the great majority of the inhabitants, with lofty sentiments of love of country, and unstinted readiness to sacrifice everything for the sake of the great cause of liberty. Some of this surely there was, but to think that even in the patriots themselves their high resolve was unmixed with baser motives and that there were not many who permitted selfish motives to rule them completely, would be to think that

human nature in some marvellous way had been changed for the moment into something sublimer and less human than it is. There were a great many of the better class of people, at least of the wealthier classes, who refused to risk anything in a struggle for liberty. There were a great many of those who joined in the struggle for liberty and yet had an eye single to the "main chance," and who even did not hesitate to do the most unworthy things for the sake of personal profit and gain, even though often it might be to the serious detriment and disturbance of the patriotic cause.

Probably the easiest way to realize how different were the actual conditions in Revolutionary times from the ideal spirit of universal patriotism that was supposed to pervade the people is to read certain of Washington's private letters in which he expresses confidentially his opinion of some of the so-called patriots around him. While we are likely to think of Washington's career as the general of the Revolutionary army as full of hardships and trials, we are almost sure to imagine that these were compensated for to a great degree by the consolation of leading a whole united, determined people, even though in an unequal struggle for liberty. We are prone to think of him as surrounded by men of high aspirations and lofty patriotism, whose presence must have been a constant source of consolation in the midst of his difficulties. Not a few there were whose char-

acters and devotion to the cause of liberty must have been all of this, but there were also not a few whose motives were entirely selfish and whose bickerings and jealousies must have been much more of a trial to General Washington than the hardships of war and the severities of the northern climate.

We might easily think from the way our history has been written that, at least in New England, Washington must have found such comparatively unmixed patriotism that it was a consolation to him. His letters show very differently, however.

I had occasion some time ago to call attention to a letter of General Washington to his brother, Lund Washington, in which he complained particularly of the officers of the troops in New England that he had come to lead. I prefer to quote his own words lest there should seem to be any perversion of his meaning through making a paraphrase or compendium of them. In a letter from camp at Cambridge, August 20, 1775, addressed to Lund Washington at Mount Vernon, he said:

"The people of this government [Massachusetts] have obtained a character which they by no means deserve; their officers, generally speaking, are the most indifferent kind of people I ever saw. I have already broke one colonel and five captains for cowardice, and for drawing more pay and provisions than they had men in their

companies. There are two more colonels now under arrest and to be tried for the same offences; in short, they are by no means such troops, in any respect, as you are led to believe of them from the accounts which are published; but I need not make myself enemies among them by this declaration, although it is consistent with truth. I dare say the men would fight very well (if properly officered) although they are an exceedingly dirty and nasty people. Had they been properly conducted at Bunker's Hill (on the 17th of June) or those that were there properly supported, the regulars would have met with a shameful defeat, and a much more considerable loss than they did, which is now known to be exactly 1,057, killed and wounded. It was for their behavior on that occasion that the above officers were broke, for I never spared one that was accused of cowardice, but brought them to immediate trial."

It would seem ungenerous on the anniversary of the battle of Bunker Hill to recall the pettinesses of some of those who took part in it. We cannot now, nearly a century and a half after the event, smirch the glory of any of those who deserve to be honored. We can, however, for our own good remind ourselves that there were many unworthy ones who took part in the struggle for liberty in anything but a spirit of true patriotism. This leaves all the more glory for those whose love of country triumphed, not only over their

enemies in the British ranks, but also the scarcely less deadly enemies in their own ranks. Fortunately the true patriots greatly outnumbered the selfish time-servers and so the result was glorious. The lesson is not merely academic, for it is a type of what patriotism must be at all times, even our own—that is, thoughtless of self and thoughtful of the common good.

Of course what Washington has thus written with regard to New England officers in the Revolution is not to be taken as applicable to them alone. The more we know about the times, above all the more we read of Washington's letters, the sorrier are we for the circumstances that surrounded him, and the more indignant with the unworthy men with whom in so many cases he was forced to associate. He mentions frequently the desertions of officers, laments their going on furloughs and not returning, bewails particularly the resignations of his own Virginians and the inordinate ambitions of unfit, unsuitable men, which led them to use every form of political influence to secure appointments as officers, though as he wrote to his brother, John Augustine Washington, " they were not fit to black shoes." Long lists of cashiered officers were sent to Congress. Washington wrote to Joseph Reed what sounds strange, indeed, in the mouth of our greatest patriot dealing with patriots, " Speculation, peculation and an insatiable thirst for riches seem to have gotten the better of every other consid-

eration and almost every order of men and party disputes and personal quarrels are the greatest business of the day." The private soldiers had faults of course. Many of them were little better than hirelings. Some of them ne'er-do-wells. We are quite confident, as a rule, that the officers must have been on a high plane of patriotic loyalty and devotion to country.

Some of them were so far from this that John Adams said, "I am weary to death with the wrangles between military officers, high and low. They quarrel like cats, they worry one another like mastiffs, scrambling like apes after nuts for rank and pay."

Washington complained also of the members of the medical profession, that the army surgeons countenanced sham complaints of all kinds on the part of the men, shamelessly taking money from them as bribes for their aid in getting releases of various kinds from service. Many of the enlisted men were better than the officers who thus betrayed their oath-bound trust, but we must not look for any high ideals in most of them. A great many of the private soldiers served only for the sake of the bounty. Many demanded double bounties, some deserted so as to re-enlist and secure a second bounty. They had to be kept constantly in check or they were likely to steal from those near the camp.

But it would be a complete mistake to think that these unfortunate sordid abuses were con-

fined to the army. Outside of the army Washington complained bitterly of the tendency on the part of the citizens to corner food-stuffs and demand high prices. Monopolies of various kinds were formed. Men who were supplying the army became wealthy from a single campaign. Many a large American fortune in the name of a fine old family proud of its generations in this country had its foundation in this kind of despicable graft. Often provisions were charged for two and three times, sometimes they were charged for and not supplied. Often the quality supplied was not nearly so good as that contracted for. Besides there was counterfeiting of money and forging of documents and all the machinery of petty and large peculation as we are likely to think of it as peculiar to our time. It would be well for us to know all this. It would be well for all Americans to know it and particularly for growing young folks. The truth is always of the greatest value even though it may be hard to bear. Falsehood has many unfortunate connotations and none is worse than a false estimate of mankind that may induce complacent self-satisfaction or over-confidence.

Our whole tendency with regard to these great men in our history is to treat them entirely too much as historical figures and not as men. They are lay figures on which we hang certain virtues and qualities and refuse to see in them any of the failings or genuine feelings of ordinary hu-

manity. This is particularly true of Washington. Only in comparatively recent years have we come to realize that he had a very interesting sense of humor which could not be concealed even amid the dignity that he assumed in accordance with the tradition of the time. Doubtless this sense of humor carried him through the bitter trials of this time. In his early life we have a letter to his dear brother Jack, written from Fort Cumberland after Braddock's defeat, in which he writes that he had heard a circumstantial account of his death and dying speech; "I take this early opportunity," he says, "of contradicting the first and of assuring you that I have not composed the latter." His expression is an anticipation of Mark Twain's telegram on a similar occasion that the report of his death was grossly exaggerated. He says of some men detailed to accompany him in the convoy of four thousand pounds of money, that "they were two days assembling, but I believe would not have been more than as many seconds dispersing if I had been attacked." It is to him we owe the story that he was never annoyed anywhere in America so much by mosquitoes as in Jersey, for there they used to bite even through the thickest boots. One of his biographers, taking this joke by exaggeration for a literal story, and fearing that it would compromise Washington's well-known reputation for veracity, as established by the Rev. Mr. Weems' story of his inability to tell a lie about the cherry-

tree—a story for which there is not the slightest authority—declared that what Washington really said was that the mosquitoes bit through his stockings above the boots. On which Paul Leicester Ford, in his "The True George Washington," comments: "Whoever invented the explanation should have evolved a type of boots other than those worn by Washington, for, unfortunately for the story, Washington's military boots went above his 'small clothes,' giving not even an inch of room for either stocking or explanation."

Washington, himself, was intensely human, though our histories have tended to make him superhuman and it was this very humanity that enabled him to understand, though he might deprecate bitterly, some of the quite as human failings of those around him, which his sense of humor helped him to bear. When we think of him as surrounded by an atmosphere of devotion, however, it is well to recall that a recent writer has said that, "Never, with perhaps the exception of Lincoln, was a president of the United States so misunderstood, slandered and abused as was the first president." * It is this that we need to remember when we try to recall the history of the past in order to make it helpful for the present. Conditions were never ideal and the troubles of the patriot were at least as great as they are likely to be in our own time.

* *Century*, March, 1911.

In a word, what we can easily re-create for ourselves out of scattered expressions in letters and other documents and records of the time of the Revolution, is a picture that is full of all the most human elements. While it exhibits many of the best traits of the race, it does not fail to show an abundance of pettinesses, meanness, sordidness and selfishness. These qualities were quite as manifest and just as common as in any other period of history, even our own. Fortunately there was enough of the salt of the earth to freshen the deteriorating elements. The patriotic souls who accomplished so much in the face of difficulties and especially with the discouragement of the pusillanimous conduct of their fellow countrymen deserve all the more credit, because their environment, instead of being that undiluted atmosphere of lofty patriotism it is so often supposed to have been, was charged with the spirit of self-seeking to a notable degree.

There is just one good reason for dwelling on this worse side of our early American history, and that was very well stated by Sabine in his "Loyalists in the American Revolution." After pointing out how difficult it was for the Colonials to determine just where their allegiance was owed at that time, he tells the story of some of the unfortunate events, the persecutions of those who in loyalty to the king preferred peace to war and were satisfied with the old order, which disfigure the history of the patriots of those times.

His apology for doing so is not that he would thus extenuate the lives and actions and conduct of the loyalists, but that such an accumulation of information might very well serve " to do something to correct the exaggerated and gloomy views which are often taken of the degenerate spirit of the present times founded, as they are, on an erroneous because a partial estimate of the virtues of the bygone age."

School children, in the United States, are brought up with thoroughgoing contempt for the Tories,* yet they were often well-meaning individuals who simply saw their duty differently from the patriots and tried to follow it. Would it not be better to teach this broader view and not start young minds off with false notions of the times and of the motives impelling those who took different sides? Often opponents were equally worthy of praise and blame.

No one honors more than I do the patriots that

* It is rather interesting to trace the significance of the word Tory. It is said to have been originally derived from the Irish word Toiridhe, a pursuer or plunderer, and was a name applied to the Roman Catholics who, deprived of their rights as citizens during the reign of Charles II, lived in the bogs of Ireland. It came to be the designation for a party when it was applied to those, whether English, Scotch or Irish, who were opposed to the bill excluding the Duke of York from the succession to the throne of England. The implication in the name was that only those of Roman Catholic sympathies favored the Duke's succession. It was replaced by Conservative in 1830. In the meantime we had employed it in this country to designate the loyalists who took part with the King against the colonists. They were sometimes called royalists or rarely loyalists, but more frequently Tories. What a volume of history gathers around the word.

so unselfishly purchased by their sacrifices our precious heritage of liberty for us. On the other hand, nothing it seems to me could be worse for us at the present time than to deceive ourselves into the thought that all the men of the past were admirably unselfish patriots and that it was easy to be patriotic because there were so many good examples around them, because the very air which they breathed was surcharged with the spirit of good will. It was just as difficult to accomplish good for one's country, it required just as many sacrifices and just as much forgetfulness of self then as it does now. Fortunately many men did it; let us hope that many men will do it in our time in spite of the corresponding difficulties and obstacles.

As a consequence of an exaggerated notion of the purity of the patriotism of those who took part in the Revolution and of the people of that time we are prone to think that there has been a great degeneration in public morals. I am one of those who believe that there are no very great changes in mankind. I do not find any trace of progress in history, but on the other, I do not agree with those who think that things are much worse now than they used to be. Usually each succeeding generation, when it gets to be about fifty, proclaims that the world is going to the dogs and things are not as they were when they were young. That is only a pleasant fiction of memory induced by that charming human

trait that we remember the better and forget the worse, in spite of the many pessimistic aphorisms that declare that evil is recalled more surely than good. There were just as many rascals and grafters in the older time, when we are inclined to think of all as patriots, but fortunately those who were virtuous men in the fine Latin sense of that word virtuous, brave and good, were able to bring enough influence to bear by their example and their efforts, not only to overcome the evil the others would have done, but also to bring a large dividend of good out of the situation.

As we face the duties of patriots in the present day, let us recall the fact that the patriots of the olden times had all the present-day discouragements and that the noble work they did was done in spite of the hindrances of the unworthy and the selfishness of the many.

We have just as much need of patriots, good and true, now as they had in the days of the Revolution. It is just as hard to be a patriot now, but it is no harder. A great many of the well-to-do inhabitants of the Colonies refused to make sacrifices, not a few of them clung to the loyalist party because they could not think that the weak Colonies would be successful against the powerful mother country. More than a few of them flopped from one party to the other as the fortune of war or the local conditions of the conflict dictated. The hardest thing for the genuine patriot to bear was to see the selfish

people around him making money, getting on in the world, accumulating fortunes for themselves and their families by their policy, while he was making sacrifices for the precious heritage of liberty that was to mean so much for all. It was hard enough to suffer at Valley Forge, but it must have been rendered doubly hard by the fact that was well known that the farmers of counties neighboring to Philadelphia, farmers supposed to be in sympathy with the Colonial cause, were sending in abundant supplies to the British Army and being paid good prices for them, though they knew that the Colonial Army was on the verge of starvation. It must have proved the very climax of discouragement to realize that in a good many cases these same farmers took advantage of Colonial disorganization to charge the patriot army more than they charged the British, though they were pretending to be in favor of the war with Great Britain and claimed to be patriots and not loyalists. In the midst of the bickerings and squabbles and petty quarrels of those who were patriots, it required a deep sense of the rightness of their cause to keep men up to great sacrifices for it.

"Graft," to use the expressive word that has become familiar to us, seems to have been quite as rampant then as in our own time. Many officers were overdrawing their pay, whenever they could with any hope of impunity. Even one general was cashiered for drawing double his

salary for a time. Officers were collecting money for rations and provisions of various kinds, clothing, shoes and the like for the men and for forage for the horses that were not supplied. Others were conniving at the cheating of army contractors for what there was in it for them. It is this that tries men's souls at all times much more than actual danger and suffering for a great cause. It is petty temptations to personal gain, when the example of those around him adds to their appeal, and the needs of loved ones seem almost to justify, that make it hard for a man to love his country honorably and nobly. The sight of the successful rascal sometimes in honor, often not in disgrace, always feathering his nest for his own, while life is hard for the honest man doing his duty as he sees it, is indeed a test. But that was the test, let us not forget it, of the patriot in the Revolution as well as in our own time.

In our time there are just as many dangers that we shall lose our liberties as when the English government was so foolishly exerting its authority trying to deprive us of the rights guaranteed by English fundamental laws. There are elements at work to-day that are just as well directed to ruin our republic as British arms were aimed to prevent its formation. We need men now who will fight, not in the battlefield, but who will take noble part in the bloodless struggle of using all their influence for the benefit of their country.

Not all the most glorious heroes of the Revolution had a place on the firing-line. The non-fighting patriots who were not of the Revolutionary army, but devoted themselves unsparingly for their country in council and administration—such men as Franklin, Robert Morris, Joseph Reed, the Adamses, the Carrolls—deserved as well of their country as the bravest of the fighting soldiers.

The patriotism of politics is even harder to exercise unselfishly and unfalteringly than that of war. There is a sublime call about war that lifts men up above themselves and the death sacrifices of many all around them in battle make it easier for the patriot soldier to devote himself to a cause for which his fellows nobly die. The patriotism of peace is constantly being undermined by unfortunate example, by corrupting influence, by selfish considerations of all kinds. Our generation above all is lamentably not exhibiting the virtue as we would wish.

Attention was called, not very long ago, to the fact that in one of our American cities the conditions were almost ideally those from which uncorrupt democratic government might be expected—the ruling of the people, by the people and for the people. In that city, which achieved a glorious place in the history of the foundation of our government, considerably more than the majority of the population are of native birth. The public schools are among the best in the country, are lavishly supported by public money and have

been organized almost the longest in our history. Besides more than two-thirds of the people own their own homes. It is often said that the three reasons for corruption in municipal politics in this country are that, first, those of foreign birth have not as yet entered into a proper appreciation of the value of liberty and their duties as citizens, that, second, as they do not own their own homes they have not the same personal interest in good government as others, and finally, that lacking education they are unable to judge properly in the matter of political duties and consequently suffer themselves to be led easily or influenced by unworthy motives and material considerations in their voting. The old American city that I have been describing, however, with all its advantages of education, native born citizens and house-owners is the most corrupt in the country. The worst of it is that it is said to be corrupt and contented.

Ten years ago this might have been said of many of our cities and there have been rather vigorous housecleanings that have improved conditions. Investigation showed that they were sadly needed. Some have taken advantage of this to declare that men are much worse than they used to be, but that is entirely due to lack of knowledge of the past. There have always been unfortunately selfish, striving elements, and whenever the great body of the citizens have not taken proper interest these have succeeded in lowering

public tone. The proportion of corrupt citizens, however, is no greater, very probably, than it has been at most other times only that by organization they have acquired power. While I do not take any stock in the vaunted progress so much talked of, but so hard to trace among men, I have still less of sympathy with those who are constantly bewailing the fact that our times are not as good as the old times, and that things are not as they were when they were boys. If we but really want to, we can accomplish as much for the common good now as at any time. While we are celebrating the well-deserved glories of our Revolutionary heroes, let us not forget that they were surrounded by as many little-souled, selfish and utterly self-seeking citizens as exist in our time.

Just as I do not recall for you the larger outlines at least of the story of the ugly side of the Revolution and the men who fought it with any ignoble motive of trying to lessen your faith in men or make you think less of the heroic noble generation that won for us our inheritance of liberty, so I do not refer to the political corruption and the shameful municipal politics of our time with any pessimistic motive. There are always the good and bad in every generation, with often the evil in the ascendant. Unless the good take counsel together and are ready to fight the battle of peace bravely, the forces of evil almost inevitably get in the saddle. While we are celebrating then

the "night before" Bunker Hill, let us not forget that the patriotic lesson of that event and its examples for the good of country should come home to all of us at the present time. We have need of good brave citizens now more than we ever had. Men who will be ready to think of others rather than themselves, intent on conserving the precious privileges of liberty in this country to future generations rather than on having just as easy and pleasant a time themselves as possible and leaving fortunes to their children—collecting, as Justice Hughes said not long ago, as most of the men of our generation are doing—a corruption fund for their children. Unless we can have such men in reasonable abundance there is just as much likelihood of our losing our country's benefits as there was if the men of Bunker Hill had been faithless to their principles. They had just as many discouragements as we have, but they had a noble purpose that carried them through it all and we do well to celebrate the glory of their patriotism.

MUTUAL AID VS. THE STRUGGLE FOR LIFE

"*Natura nihil agit frustra* is the only indisputable axiom in philosophy. There are no grotesques in nature; not anything framed to fill up empty cantons and unnecessary spaces. . . . What reason may not go to school to the wisdom of bees, ants and spiders? What wise hand teacheth them to do what reason cannot teach us?"—Sir Thomas Browne: *Religio Medici*.

MUTUAL AID VS. THE STRUGGLE FOR LIFE *

POPULAR science is nearly always rather amusing. It consists of sensational announcements of various kinds for the most part discoveries that were never made, attractive but fallacious theories and a little modicum of truth. Popular medicine is usually a huge joke. We are still in the humoral (it might also be called humorous) stage of pathology so far as the general public is concerned, for when ill, people are bilious, their blood is out of order, they are catarrhal, or they are rheumatic. All these represent changes in the humors of the body. Virchow by his cellular pathology changed all that more than half a century ago, and now we know that it is not the humors or fluids of the body that count in disease, but the living cells. Popular pathology has not quite got around to that yet. Of course, the reason why these old-fashioned notions are still emphasized is that they are being exploited

* The material for this paper was originally gathered for a short address at one of the meetings for school children of the International Peace Conference at Carnegie Hall in 1910. It was enlarged, for lecture purposes, and was published in nearly its present form in *The Common Cause* (New York). Thanks are hereby given to the publishers of that magazine for courteous permission to republish.

in various ways for the benefit of nostrum venders. Broad generalizations are easy in humoral pathology and it is broad generalizations that are most taking popularly.

It is not surprising perhaps, seeing the pecuniary interest in the maintenance of old ideas on the part of the quacks and nostrum venders, that we should have humoral pathology in popular medicine. It is, however, not a little astonishing that, in many other departments, popular science should be quite as far away from realities as in our medical sciences. In biology particularly is this true. It would be infinitely amusing only that it is so amazing to find even those who are supposed to be well informed, often those indeed who are considered to be educated, arguing confidently on things of popular, and above all social, significance from principles assumed to be accepted in biology though they have been rejected for many years now by biologists. This is particularly true with regard to many supposed details of the theory of evolution. As a distinguished professor of anatomy here in America, the late Professor Dwight of Harvard, declared not long since:

"We have now the remarkable spectacle that just when many scientific men are of accord that there is no part of the Darwinian system that is of any great influence and that as a whole the theory is not only unproved but impossible, the ignorant half-educated masses have acquired the

idea that it is to be accepted as a fundamental fact."

This is true, however, not only for "the ignorant half-educated masses," but also for many educated people, or at least many who think themselves well-informed. There are teachers in our colleges, writers of books on many subjects and especially on education and social topics of various kinds as well as on psychology and the medical sciences, who assume without question many Darwinian principles as if they were gospel truth and to be argued from without any possibility of their being questioned. Nay, one distinguished American biologist, the well-known professor of biology at Columbia, Professor Thomas Hunt Morgan, has been unkind enough to say that the biologists themselves sometimes assume a knowledge in this matter that they are not sure of. In the preface to his striking work "Evolution and Adaptation," which has done more than any other contribution to biology here in America to show us how tottering Darwinism is, he said: *

"But I venture to prophesy that if any one will undertake to question modern zoologists and botanists concerning their relation to the Darwinian theory he will find that, while professing in a general way to hold this theory, most biologists have many reservations and doubts, which they either keep to themselves or, at any rate,

* The Macmillan Company, New York, 1903.

do not allow to interfere either with their teaching of the Darwinian doctrine or with the application that they may make of it in their writings. *The claim of the opponents of the theory that Darwininism has become a dogma contains more truth than the nominal followers of this school find pleasant to hear.*"—(Italics ours.)

When it comes to other sciences it is not difficult to find even more startling expressions. Education has been particularly the favorite field of the theorist in modern times, and pedagogics have suffered much from the invasion of confirmed Darwinians who did not know that the principles they were assuming so confidently had been rejected by those most competent to judge in the matter, and indeed often by Darwinians themselves. Professor Vernon Kellogg of the Leland Stanford University of California, in his "Darwinism To-day," said:

"In pedagogy it is also the theory of descent rather than the selection theory which has been drawn on for some rather remarkable developments in child-study and instruction. Unfortunately it is exactly on that weakest of the three foundation pillars of descent, namely, the science of embryology with its Müllerian-Haeckelian recapitulation theory or biogenetic law, that the child-study pedagogues have builded. The species recapitulates in the ontogeny (development) of each of its individuals the course or history of its phylogeny (descent or evolution).

Hence the child corresponds in different periods of its development to the phyletic stages in the descent of man. As the child is fortunately well by its fish, dog and monkey stages before it comes into the care of the pedagogue, he has to concern himself only with its safe progress through the various stages of prehistoric and barbarous man. Detect the precise phyletic stage, cave-man, stone-age man, hunter and roamer, pastoral man, agriculturist, and treat with the little barbarian accordingly! What simplicity! Only one trouble here for the pedagogue; the recapitulation theory is mostly wrong; and what is right in it is mostly so covered up by the wrong part that few biologists longer have any confidence in discovering the right. What, then, of our generalizing friends, the pedagogues?"

Absurd as are the applications of some phases of the evolutionary theory to education because the biological principles on which they are supposed to be founded are now rejected by investigating biologists, these do not deserve nearly so much deprecation as do some of the parallel applications of pseudo-biology to social questions. President Nicholas Murray Butler of Columbia in a paper read before the American Academy and the National Institute of Arts and Letters at the New Theatre, New York, December, 1910, called attention to certain of these in some rather interestingly striking sentences that sum up more of the foundations of the theory of evolution, as

it has been accepted generally during the nineteenth century, than perhaps most of its advocates would like to think. He said:

"There are wars and rumors of war in a portion of the territory occupied by the doctrine of organic evolution. All is not working smoothly and well, and according to formula. It begins to appear that those men of science who, having derived the *doctrine of organic evolution in its modern form from observations on earth-worms, on climbing plants, and on brightly colored birds, and, who then straightway applied it blithely to man and his affairs,* have made enemies of no small part of the human race." *

It is, indeed, from this standpoint of evolution that popular science, so-called, when it has touched upon social questions, has made most exaggerated and eminently wrong applications of what were supposed to be observations derived from nature. We have had much "nature faking" in our time, and the characterization of the habit by that expressive term has helped us to understand it better. Men have studied animal life, have put themselves in the place of the animals, have exaggerated the significance of animal activities, have told stories about animals that "they had known," that make excellent fiction—only unfortunately they did not label it fiction, until the most confused notions with regard to the relations of human and animal life have become diffused.

*Italics ours.

A good while ago Virchow declared against the teaching of advanced evolutionary theories in the schools, because he said that eventually they would have to be taken back and this would bring serious discredit on science. A quarter of a century later a great French writer and thinker declared the bankruptcy of science because the claims, particularly with regard to evolution and its supposed place in enabling us to understand man's origin and destiny, had been completely a failure. It is this that we need to remember with regard to many of these evolutionary fads and fancies.

Take for example the place that has been given to The Struggle for Life as it has been called —The Struggle for Existence as Darwin termed it. There is no doubt at all that, without many checks upon the growth in numbers of living beings, the earth would soon become overcrowded.

There would be little room for any other but one species of living being if that one had uninterrupted opportunity and an absolutely unimpeded chance to propagate and maintain itself. If to animal nature we add plant life, the difficulty becomes still more pronounced. As Darwin said:

"There is no exception to the rule that every organic being naturally increases at so high a rate that if not destroyed the earth would soon be covered by the progeny of a single pair. Even slow-breeding man has doubled in twenty-five years, and at this rate in less than a thousand

years there would literally not be standing room for his progeny. Linnæus has calculated that if an annual plant produced only two seeds—and there is no plant so unproductive as this—and their seedlings next year produced two, and so on, then in twenty years there would be a million plants."

Arrangements are made, then, by nature by which the possibility of such increase on the part of any single living being is prevented. This prevention comes mainly in the seed stage or in very young life Under these circumstances the destruction of one set of beings proves of benefit to the others by providing them with nourishment already prepared for them. Darwin has shown that this destruction is particularly likely to affect varieties of the same species and he has given a number of examples to show how such varieties replace each other. The smaller Asiatic cockroach has replaced its larger relative; the rat of one species replaces that of another under special circumstances of climate. Here in this country the English sparrow drove out our native sparrows, to our infinite disgust.

On the strength of these observations of Darwin the struggle for life or for existence is supposed to be the great underlying law among living beings. The principle in biology is supposed to be that the weaker always goes to the wall and that this is the cruel law of nature, neglectful of

the individual, but careful of the race. The elimination of the weaklings is supposed to be good eventually, perhaps not for the individual, but for the generality of its kind. This law has even been supposed to apply in humanity as well as among the animals and the plants. Men have come to justify their power to get the better of their fellows on the principle that the unfit must be eliminated and that the best people must be preserved. It is supposed to be an inevitable fate that the weaker should suffer and that the successful ones should be able to take advantage of them; not to take the opportunity to secure such advantages is supposed to be in itself a weakness, indicating that somehow its possessor is not one of those destined to help the race in its development and progressive evolution. This is Nietzscheism, and it has tinctured more of our modern thinking than most people suspect. In its exaggerated form it is horribly selfish. In certain moderate forms, however, the evolutionary (supposed) basis for it has made many a man ready to pursue his successful career in spite of the sufferings inflicted on others because this was presumed to be the great law of biology.

Now, as a matter of fact, while the struggle for life has a certain importance, this factor is of very little significance within the species and above all within particular varieties of animals. Animals of the same kind do not as a rule injure one another, nor is there a tragic struggle for

existence among them, except in case of famine. Occasionally a mother in search of food for her young may prove ready to fight and even to injure her fellows. We are not likely to consider that as any selfish struggle for existence, however, but it is on the contrary a manifestation of the finest instinct in the world. What we find among animals of the same kind, above all in the state of nature, is a rather striking tendency to be mutually helpful to each other, living in communities so as to protect each other, and especially the weak among them, from their enemies, and submitting to social sacrifices that make for the preservation of the race. There is usually even to be found among animals a certain policy of self-protection for their groups against the "rogue" animals, the troublesome ones that show temper and that often seem to be definitely put into submission by animals who combine for that purpose against them.

From the largest to the smallest animals this principle of mutual aid is strikingly exhibited. It might be expected that so large a beast as the elephant would not need any special instinct of mutual aid to help in his protection. Yet even elephants run together in droves or herds and it has often been noted that when there is danger, or when they scent the presence of a lion or a tiger, there is a drawing together of the herd with the sturdy older males on the outside of it, and the females, and above all those who are bearing,

or mothers with their young, in the centre of the herd. The big cats find no easy prey unless they can steal on the elephants unawares and the dainty morsel that a nice young elephant might be for them is denied to them by the instinct for mutual aid which brings the animals together.

What is thus true of the elephants is almost more strikingly displayed among wild horses. It was a subject of study years ago among the droves of wild horses on our own plains. These were not native American animals, but were the descendants of animals that had escaped from civilization and gradually formed these associations for themselves. It was evidently the precious instinct of the race that enabled them to do it. The horses ran together in droves and when they were attacked by their greatest enemies, the wolves, fine arrangements for protection were made. The horses formed into a circle with their heads towards the centre, and the foals on the inside, and nothing but a battery of heels was presented to the enemy.

Most of the larger animals follow this custom. Cows naturally get together in droves even where they have been for generations domesticated and without any enemies to compel them to the exhibition of this instinct for mutual protection. It is interesting to see herds of buffalos, of antelopes, even of deer, thus exhibiting the precious instinct of mutual aid. Somewhere they have learned, or it is instinctively in their nature to know, that

living together they are able to get at their food better or protect themselves to better advantage, and though they lose something of their individuality, or at least their power to do things absolutely at will, such sacrifices seem not to be sufficient to keep them from the exhibition of this instinct. There are strong underlying sex and family elements in these tendencies, yet there is also something much more than these.

There is a very interesting story told by cowherders in the West in this respect that seems almost too good to be true. It may be nature faking to some extent, but it certainly is in line with what one usually finds as regards the tendency of animals to protect and care for the weaklings and foster the race. When the herd goes out in the morning on the plains for its grazing—or when it did in the old days, for there is nearly an end of prairie grazing—sometimes it would come to a nice little valley of green soft bottom grass where a small stream spread out and brought at times abundant water. Ordinarily one might expect that the leaders of the herd would simply gobble this luscious morsel up, and let the rest of the members fare for themselves on the tough, sparse grass around. If there were a number of calves in the herd this was not what happened, however, as a rule, but a few of the older cows and the calves would be left at this spot while the herd wandered farther on, picking up its grass where it might and coming back

this same way in the evening to gather in these scions of the herd. If a wandering coyote nosed out this little group there were enough old cows with them ready to do battle to put danger out of the question. An aroused mother cow is an opponent that even fiercer animals than the coyote hesitate about.

I shall never forget on a visit to Yellowstone Park seeing one of the black bears who came prowling round the camp after dinner in order to gather up any "unconsidered trifles" that might be left, in the shape particularly of preserve jars or condensed milk cans, get into trouble because of heedlessness in this matter. By chance, in his hesitant peregrinations, he wandered in between the cow of the camp and her calf. For a moment he was unnoticed, but when the scent of him came to mother cow and when she raised her head in calm bovine fashion to discover what this strange animal smell was, there was a scene. The bear was between her and her calf, and her mother's heart told her that could bode no good. She made straight for him head down. It took him but a moment to discover that she was making for him and then there was a vision of "one scared bear." He started on the run for the neighboring woods, touching only the high spots on the way. I do not think that any of us had ever seen a bear humping himself in action as this one. After he had gotten about a hundred feet away he ventured a scared look

over his shoulder to find out whether that infuriated monster was still after him. That did not seem to lessen his speed, however, or slacken his diligence in getting away. The cow is a charming domestic animal, but don't worry her offspring or her nurslings, or the young of the herd, or there may be trouble.

Even among the animals of such size and strength that they would seem to need very little the instinct of mutual aid there has been implanted a precious helpfulness that leads to the preservation of the weak and the conservation of the race.

All the hoofed animals congregate in herds. Only the felines travel more alone, yet they are usually found in pairs or groups. The young are always protected in their weakling stage and the more enemies an animal has and the less its means of protection the more gregarious its instincts and the greater its tendency to be helpful to its kind. The great law of charity among men is more than adumbrated among the animals. To say that such instincts are of slow growth is to beg the whole question, for in an inchoate or imperfect form they are useless. The instinct to be valuable must be complete. The struggle for existence, far from being the exclusive rule of life, is only an accidental circumstance. Mutual helpfulness represents a deeper attribute, a part of the design that pervades the universe.

With all this of mutual aid among the larger

animals, it is not surprising that the smaller animal creation should exhibit exquisite arrangements and instincts and social qualities for their mutual protection, assistance, propagation and preservation. The bees of course furnish an excellent example of this. Wasps are not such favorite subjects of study, but provide quite as interesting illustrations of mutual aid. From the earliest times the ant has been held up, not only as a model of industry, but also as a model of the social virtues. Its community instincts are the only factors that preserve it, in spite of its small size, and enable it to carry on its race and its work in such ordered occupation of a continuous nature that we other mortals who look at it and know that such continuous occupation is the only real happiness in life, cannot think of it as being in any other condition than one of happiness.

The wasps perhaps deserve the first word because they are not so well known as are the other insects. The most familiar variety of them builds its nest of water-proof paper, lives the community life with different duties assigned to different members of the community, and all living on in peace and quiet. The wasp is thought of usually as " waspish," but our human sense of that word is due to the fact that, when interfered with, the wasp asserts himself somewhat unpleasantly, but in the community life he seems to be a model of faithful diligence and industry.

We are rather proud of the fact that, in our generation, men have taken to inventing many things, and we think that that shows how much humanity has progressed. Let us not forget, however, that a good many of our inventions were anticipated thousands of years ago by the animals, and the wasp happens to furnish a typical example. He was the first paper maker. Man did not begin to make paper until the end of the thirteenth century. The wasp had at that time been making it for at least several thousands of years. The wasp paper is wood-pulp paper and very well made. Take a portion of an old nest and see how well it is adapted to its purposes of protection from sun and rain. A wasp's nest will last for years, even when somewhat exposed to the elements. We began to make such wood-pulp paper, some would say not nearly so well, only a little more than a generation ago.

There are other inventions that the wasp has for the protection of himself and his nest. Some one invented a hypodermic needle for him. That was a long time ago. When man made it first, about half a century ago, or actually began to use it with such definite purpose as the wasp does, we hailed it as a new invention. Of course the wasp is scarcely to be given credit for the invention, but then he had it and used it several thousands of years ago, no matter where he got it, and his sting is a most interesting instrument for

that reason. He also supplies a special acid to go with it that makes the weapon very effective wherever and whenever it is applied.

The bees live together, as we all know, and do a whole series of wonderful things to help one another. Like all beings that live in communities, they have a number of wonderful inventions. The wasp can make paper and we have learned to rival him. The bee can make wax, but as yet we are not able to imitate that. The glands in our ear, by some process we cannot understand, succeed in making a rather good imitation of the wax made by bees, but so far, I believe, we have failed to imitate either of these processes. The bees work in what would seem to be the most eminently unsuitable and supremely undesirable medium for an insect of their kind to have much to do with. Honey is sticky beyond almost everything else that we know. Even a little on one's fingers makes the hand feel sticky all over. The bees that work in its manufacture must fly with very delicate wings and, besides, have a large amount of delicate apparatus of various kinds on their bodies for their work, but somehow they do not "get stuck on themselves." Human beings would almost surely do so, if they did such fine work as the bee does, and with such viscous materials. Certain of the bees aid the workers to comb themselves after they have delivered their load of nectar, and help the bee

workers within the hives to keep themselves from getting "all balled up" in the stickiness of their work.

I was asked to contribute a paper last year to the section on Hygiene and Sanitation of the Pan-American Congress held at Buenos Ayres, and thought it worth while to call attention to the fact that, whenever we find animals, large or small, living together in something of a community life, there is always a rudimentary development of sanitation and hygiene. They care for their excreta and carefully remove it, they care for the cleanliness of their quarters, they remove intruders in general, they furnish an excellent example of what men must do when they are crowded together in somewhat confined quarters. This is typically illustrated in the bees, though it can be noted among the ants, the chimney swallows and numerous other creatures. A paragraph from the paper on that subject which was published in the *New York Medical Journal* for September 3, 1910, may serve to illustrate the general tenor of the article:

"Among the social insects the instincts of hygiene and sanitation are strongly developed. Observers have told stories of bees and ants in this matter that are quite startling, because they would seem to indicate a distinct use of reason. Bees always go out of the hive for the disposition of excreta, and special arrangements have some-

times been noted for the prevention of the soiling of the contents of the hives when the insects are suffering from certain dysenteric diseases that occasionally occur among them. It is well known that, if any other insect gets into the hive, it is killed and then, if its body cannot be removed, it is surrounded with a thick coating of wax that keeps it from becoming an annoyance. If a mouse finds its way into the hive it is stung to death, and then all the softer portions of its tissues are gradually carried out, leaving only the bones to be encased in wax, so as to prevent the contamination of the contents of the hives and the danger to themselves that the bees apparently know by instinct accrues from the presence of decomposing material. Bees remove their dead companions in the same way, and there are other insects that seem to have some of these same prescient instincts."

There are other various manifestations of hygienic instincts. How interesting it is, for instance, to realize the significance of the last act that the bee performs before it closes up a cell full of honey! It is said that it turns round and stings the honey. The meaning of the action was not understood until we found that the fluid which is injected along the groove of the bee's sting and which causes the smarting pain after it, is a kind of formic acid. This is one of the best antiseptics that we have, and is closely related to the formaldehydes which in recent years have

come to be used more than any other substance as antiseptics. We were rather proud of our discovery of the formaldehydes when we noted that they could be used to such distinct advantage as harmless preventives of putrefaction, fermentation and other undesirable processes in highly organized material. The bee, however, seems to have known this many thousands of years ago. Of course he did not learn this of himself, and we must suppose that the knowledge and the power to use it were given him. We cannot think that what man has secured by the highest use of his reason and inventive powers should have been obtained by the bee as a mere accident, or, what is still more improbable, a long series of accidents fitting into one another. Indeed, the more one knows about hygiene and sanitation among the animals that live community lives and the wonderful inventions that they use in order to secure an enforcement of the rules or laws that are absolutely essential for these purposes, the more surprising it is that man should think of these inventions as only recent or that we should conclude that they are coming to us now in the natural course of evolution. As a matter of fact, the hygiene and sanitation of the past were never nearly so imperfect as we are likely to think them, if we accept too readily certain foolish present-day notions that the world has never, until our own time, produced anything worth while. Whenever man has lived the com-

munity life and large cities have become the rule, we have had a fine development of hygiene and sanitation.

Some phases of this in history are of the greatest interest. Our hospitals, two generations ago, were about the worst that could possibly be imagined, but the hospitals of five centuries ago were among the most beautiful that had ever been erected; they were thoroughly hygienic and sanitary and fine work was done in them. A century and a half ago, tuberculosis was made a reportable disease in the Papal States and in Naples, and all clothing that had been used by the tuberculosis patient had to be burned. Leprosy was probably as common during the Middle Ages as tuberculosis is now, yet the mediæval people, by sanitary regulations, succeeded in practically obliterating it.

Even more interesting than what one finds among the bees and wasps is the community life, the mutual aid, the fraternal helpfulness among the ants. It is the development of the social virtues that is the criterion of the evolution of culture, refinement and true education among men. Man is supposed to have begun his career as a savage and gradually to have developed to the point of our modern intricate civilization. What is even more absorbing than any story of development, however, are the many instances of decadence among races when, for various reasons, selfishness broke all bounds. Indeed, men of refinement

may, through deterioration, sink even lower than the beasts.

Whenever we find a nicely balanced civilization with a real attempt at securing the greatest happiness of the greatest number, the social virtues are finely developed. It is the typical difference between man and the beast that, while beasts have but a few prescient social instincts (though all of them have some in the midst of a generally selfish life), man's life is supposed to be much more largely social and selfishness is distinctly a fault. In most things the animals are selfish, and the surprise is to find them practising self-denial in a few isolated instances. When man does not think as much of others as of himself, he falls below the standard of capacity and achievement.

If this standard of helpfulness for others and devotion to the community be taken as representing the best expression of rational life, then many insects display it to a very remarkable degree, and the creature that is closest to man is the ant. The animals that most nearly resemble man in their anatomy are eminently lacking in any traits of unselfishness. There is practically no attempt at any more community life among the apes than is exhibited among many animals much farther away from man in their bodily constitutions. Indeed, the apes are not as high in this respect as some quite distant animals classed by learned evolutionists as far away from man in the scale

of being. When that distinguished entomologist, Father Wasmann, S. J., pointed out this fact, that by their social qualities, the ants, which are so far from man in any anatomical scale, are nearest to him in the social scale, it could not but prove a very serious objection for any theory of descent; for what are confessedly man's highest qualities are here exhibited in a remarkable degree by the very lowest creatures, and come as a great surprise to those for whom the question had never before been put so clearly.

There is no doubt, however, that the more we study the ants, the more we realize that the advice of the dear old nature-student in the Scriptures, who referred men to the ants for lessons in prudence, represents a great truth of biology.

"Go to the ant, O Sluggard; consider her ways, and learn wisdom:

"Which, although she hath no guide, nor master, nor captain, provideth her meat for herself in the summer, and gathereth her food in the harvest."

The foresight of the little creature that gathers its harvest, that has been known apparently to plant, to weed its gardens, to keep domesticated creatures—for the aphides or plant lice are really nothing but the cows of the ants; that has been observed gathering grain into storehouses under ground, yet with such care as regards moisture that it does not sprout; that indeed has learned to do all the tasks required in community life,

even communicating in some wonderful way with others of its kind—all this is one of the marvels of the world around us. Tasks are allotted—to some the care of the young, to others the cleanliness and order of the home; while delvers, harvesters, builders and many other classes of toilers are busy at their own especial duties. Mutual Aid is their constant concern. They seem to be untiring in helping one another for the benefit of all. Where they got their social instincts we cannot know except by deduction, but that these are not the result of chance or of any mere elimination of the unfit, without some definite purpose, is now quite clear.

It is not the insects alone that have made wonderful provision for community life; the plants and the trees have done the same thing. Long before man had even dreamed of an airship, the cotton plant made an airship for its children. Long before man had ventured to use sails or had learned to use them, the maple and many another tree had learned to use sails on their seeds. The definite idea of the plant is to give its children as good a chance in the world as possible. If the little ones dropped close alongside the parent-stem, they would grow up without the light and the moisture necessary for vigorous life; indeed, they could not grow to maturity at all. All sorts of arrangements are made by the tree to the end that its seeds shall be carried away. The cotton plant made the cotton boll to be carried by the

wind, and our Indian tobacco has a similar contrivance for its seed. There are numerous prickly shrubs that depend on entangling their seeds in the clothing of human beings and in the hair of animals. When the little girl has stickers thrown into her hair by her little brother or someone else's little brother, she may wonder why nature ever invented such ugly things as these burs. They represent, however, a definite plan, exhibiting a fine adaptation of means to ends, by which the seeds are carried far away from the parent-stem and get their chance to grow, undisturbed, in a location where they can have plenty of light, air and moisture.

What is not so well appreciated, even by the students of nature, is the fact that the plants also care for one another and, by certain curious social instincts, grow together and are thus preserved from many dangers. The lonely tree in the middle of the field is much more subject to risk in the wind, and much oftener struck by lightning, than the tree in the forest, and it is very noticeable that trees have a predilection to community life, at least in the sense that a definite effort is made to plant their young around them. Each tree and plant and shrub has wonderful devices that are meant to enable it to give its offspring a good start in life. It is Mutual Aid expressed through the maternal instinct, but it must not be forgotten that this, too, represents one of the countervailing factors, indeed one of the strong-

est, against the influence of the so-called struggle for life. The protective instincts of the mother animals are well known, and how they will dare and venture and accomplish for their young, are familiar to us all. The mother trees and plants, however, are not less ingenious in their care for their offspring. I have often tried to trace for children the wonderfully interesting ways of the plants.

I know nothing that better brings home the lesson of helpfulness and care for those smaller than themselves and unable to care for themselves, than the mothering, brooding habits of many plants and trees.

The hygienic impulses are also developed by plant life, special efforts being made to avoid overcrowding. For instance, all the broom plants have explosive seed pods out of which the seeds are shot with quite a little force, and to a considerable distance, in order to insure their not being all crowded in deadly shade beneath the parent-stem where air and sunlight and water would be lacking. A large number of other plants have such devices for scattering their seeds. There would seem to be a coiled spring somewhere in the seed pod. It has often been pointed out, however, that, before the actual explosion takes place, it is impossible to find any trace of this spring in the pod which can be cut or broken in any one of many different ways, yet the spring will not be discovered. The grasses protect them-

selves and their offspring by the presence of hooklets on the ends of the seeds. If the grass seeds fell directly to the ground they would lie on the surface, and, as soon as moisture and heat came on them, they would germinate; then, having no roots, or if these were not well started, the sprouts would soon wither away.

To prevent this destruction the hooked seeds are very well devised. They catch on the stem of the grass and, since they are dry and not in contact with earth, they do not germinate but remain until the tread of some animal or a roller comes along and drives them into the ground, virtually planting them. Hence it is that lawns will not grow well unless animals are allowed to graze on them and, as usually in their grazing their droppings serve as a fertilizer, they pay back to the field for the food that they take from it. Nature has wonderful compensations, and mutual benefit and aid are the rule among living things. It might easily be thought that a lawn would be injured by having animals graze over it, yet just the opposite happens, and, unless something of this kind is done, nature refuses to go on producing grass to no purpose. Man has succeeded in cheating nature in one of her efforts at mutual aid in this matter, by devising the heavy roller which takes the place of the animals in pressing the grass seeds into the ground; but he has also to transport the fertilizer and has merely disturbed one of nature's processes.

Though the animals would seem to be destroying the grass by eating it, they are really adding new life to it, giving it, as one might well say, a chance to exercise its functions.

Perhaps the most ingenious device for the protection of the tree and the securing of the propagation of its race, if we may look at it from a certain human viewpoint, is the tendency of unripe fruit to produce rather painful disturbances in human beings and also in animals that eat it. Few people stop to consider what the meaning of this is for the tree or the plant. We are apt to look at it entirely from our point of view and to consider it a decided inconvenience. Most fruits are annuals. In the ordinary course of nature, when fruit begins to ripen it is so long since men and animals have had a chance to eat this kind of fruit before—that is, for nearly a year—that just as soon as the young fruit appears they are tempted to take it. At this time the seeds are not ripe and would not germinate. The purpose of fruits, so far as the tree is concerned, is to induce animals and men to scatter the seeds by carrying off the fruit. This purpose would be entirely defeated if the seeds were taken from the tree while yet unripe. There is in most growing fruits, then, in their unripe stage, a poison present. Why it is there would be hard to say, but that it is there we know by the disturbance it causes men and animals. A boy who eats green apples and gets trouble "in his midst" is

duly warned not to do it again, and is likely to heed the warning.

In the meantime, the tree or plant has protected its children from interference until they have reached the age when they can get on in the world for themselves. Sometimes, when a physician sees the rather serious disturbance that such an indulgence in unripe fruit occasions, he may be inclined to think that the punishment is greater than the offence really called for. We all know, however, that it is always an extremely dangerous thing to interfere with a mother in her care for her young, whether the young be animal or human, and so it is not surprising to find that the plant-mother unsparingly resents this interference with the care of her progeny. A cat has been known to rout a bear when her fears led her to believe that the big animal was about to attack her young. A mother hen, though the hen is sometimes considered a type of cowardliness, and we speak of chicken-heartedness, will not hesitate to attack even a snake; though before the duties of motherhood fell on it, it would fly thoroughly frightened at the first indication of the presence of a snake. Nothing is too great for mother love, and instances of it occur in the plants as well as in the animals, if we only study these mothers' lives of solicitude.

While, then, the struggle for life seems, when looked at superficially, to be the most important factor in any process of evolution that there may

be in the world, bringing about the elimination of the unfit, what we find on detailed study is that, for the defence of the weak, nature has given a whole series of protective instincts by which the young mothers, during the offspring-bearing period, are enabled to offset adverse conditions and avert many dangers. Without this, the course of things in the world would have been very different. The weak would literally have gone to the wall and been destroyed, and we would have had only a world of conquerors around us. What we know, on the contrary, is that, whenever the conqueror in his selfishness has absorbed more than his share of the good things of life, nature has found means to eliminate him, leaving in his stead many of the smaller, weaker ones to carry on their existence in peace and to propagate their race. The huge dinosaurs, the immense sloths, the mammoths, the enormous cave bear, have all disappeared in the course of time, leaving smaller animals with inborn impulses of mutual aid, that enable them to survive and to continue their race quite undisturbed.

Darwin once regretted in one of his letters that he had ever called his book the "Origin of Species," because it has nothing to do with origins, and wished that, instead of following the advice of friends, he had taken counsel of himself and called his book by its secondary title, "The Preservation of Favored Races in the Struggle for Life." This second title is, however, seriously

defective if the preservation of the weak is not to be considered as brought about to a great extent by internal forces, and especially so if it fails to recognize many other factors at work, besides the struggle for life, in preserving races—not the least important of which is mutual aid. Darwin supposed that, somehow, a great many species come into existence out of the fertility of nature and the tendency to vary. This is the supposition at the basis of any argument of his. Some of these races are preserved, because nature eliminates those that are the less fitted to survive. Natural selection is not a positively active process, but entirely negative; whatever choice is exercised is for elimination. Now, besides bringing many species into existence, nature gifted some of them with a tendency to care for each other that has helped them to maintain themselves. This mutual aid is a factor in the preservation of races that needs to be emphasized.

The phrase, The Struggle for Life or for existence, has been so often used in recent years, supposedly representing a basic truth in biology, that men have come to apply it as if it were an all-prevailing principle of activity among living things. Even in humanity it is said that there is a constant effort on the part of nature to eliminate the unfit, and men sometimes justify harshness in the treatment of their fellow-men by declaring that struggle for existence is the law

of life, and if the weaker go to the wall it is only in the course of natural evolution.

The struggle for life, however, as we have seen, except under conditions of stress and strain, occurs but very little within species, though different species prey on each other. On the contrary, everywhere the observant student of nature finds mutual aid as a wonderful principle of life. Fraternity, charity in the best sense of the word, care for the young and the weaklings, all these are manifested everywhere in nature from the smallest to the largest of the animals. Nearly everywhere one finds a readiness on the part of members of the same species to be helpful to each other, and though the law is not absolute and has exceptions, it carries with it a number of precious lessons for man.

Among men themselves competition and the struggle for existence have never brought out the best qualities of the race, but have only allowed certain individuals, exaggeratedly developed in one or a few qualities of human nature, to triumph over their fellows and get the better of them, because they are men of one idea. On the contrary, the gradual development of the great principles of democracy came about through combinations of men and sacrifices for each other in mutual aid and helpfulness. The guilds of the Middle Ages represent very well what can be accomplished by mutual aid. Wars, on the contrary, represent how much of destruction can

be wrought by the principle of the struggle for existence. The successful warriors have been able to create and cherish a sentiment of admiration for themselves and their work that has constantly hampered mankind in the phases of its development.

Men are denying their better natures when they appeal to the supposed biological principle of an all-pervasive struggle for life as a justification for thoughtlessness of others in any way. In most of the species we are able to trace in symbol, sometimes it may be in caricature, the great principle of charity and tenderness toward others that exists in all normal human hearts and has to be choked up before a man can become quite content in an utterly selfish struggle for himself. Christ came to teach a great law of human charity, but this already existed in human hearts and He was only emphasizing and completing it. The Creator had put into all of His creatures, even the humblest and often apparently the fiercest, something of this same beautiful law on which so much of the happiness of mankind depends.

Nowhere can one find better evidence for the existence of the Divine plan in the universe and support for the old argument of design than in the study of this important factor, mutual aid. The instincts of the animals which prompt them to it could only have come into existence complete as I have said, for in rudiment they would

have proved detrimental rather than helpful to the race. It is because of the more careful study of these problems of instinct that so many of the present-day biologists are coming back to see the value of the arguments founded on teleology. Biologists are supposed not to be teleologists, but a great many of the most prominent investigators in biology of the present day are quite ready to declare that the reason for many of the manifestations that are seen in animals and plants must be that there was a purpose put into them at the beginning. Natural selection through the struggle for life is only a negative and a minor factor in whatever evolution there is. There is an internal factor shaping the destinies of the living world more important than this and best exhibited in the important law of mutual aid.

The great principles of charity and fraternity occur everywhere among living beings, even among the plants. No being is so low as to be without it. Evidently the Creator who planned this universe (for one would as soon think of finding a watch and saying that it happened by accident, or a printed edition of Homer published by chance) must hold that principle very dear, for He has put it as the basic principle of life into all His living creatures. This is a phase of our modern evolutionary theories that is seldom mentioned by our popular scientists, though it eminently deserves to be.

I know nothing more interesting in modern

biology than this study of helpfulness for others as displayed throughout all living nature. When a man dies, the race, stripping away the trappings that have concealed the real man from us, judges him entirely by what he has done for others. Before death, the power that his selfish success has given to him may conceal, at least for the moment, the true inwardness of his accomplishments in life. With the disillusionment of the end of life this disappears, and it is the man who has helped others whom we look up to as the type of what is best in the race. This seems a contradiction of the natural order of things in the light of much of the teaching of present-day popular biology, but it is the most natural thing in the world when we look a little below the surface and find the great principle of fraternalism and mutual helpfulness exhibited in the qualities, and often among the most precious qualities, of living creatures.

What we need just now is a deeper study of Mutual Aid in order to counteract the evil influences on social life of the exaggerated significance of the struggle for life. What we need, besides, is the lesson not to jump at conclusions, but to wait until we know a subject definitely before hastening to think that we know all about it.

PROFESSIONAL LIFE AND COMMUNITY INTERESTS

"I hold every man a debtor to his profession, from the which, as men do of course seek to receive countenance and profit, so ought they of duty to endeavor themselves by way of amends to be a help and an ornament thereunto."—FRANCIS BACON.

"And ripen justice in this commonweal."
—SHAKESPEARE.

"It is not enough to have earned our livelihood. Either the earning itself should have been serviceable to mankind, or something else must follow. To live is sometimes very difficult, but it is never meritorious in itself; and we must have a reason to allege to our own conscience why we should continue to exist upon this crowded earth."—ROBERT LOUIS STEVENSON.

PROFESSIONAL LIFE AND COMMUNITY INTERESTS *

LADIES AND GENTLEMEN: I should like to think that I had not come all these 1,500 miles across the continent to address you as graduates without having a special message for you. Yet I hesitate to think that anything that I may say to you in the short time to which my address must necessarily be limited can mean very much. If your years of training with the teachers at Creighton University under the supervision of my dear old friends the Jesuits, to whom I am quite free to confess that I owe nearly all of whatever I may possess of education myself, have not furnished you with precious lessons that will stand you in good stead in the trials of life that are now just ahead of you, nothing that I may say in a few minutes at the end of your last university year is likely to prove a substitute for them. Influence is a question of repeated instruction from many points of view, and not merely of time-to-time messages supposed to be of special significance. I have hoped, however, that possibly I might find a thought to express

* This was the address to the graduates in Law, Medicine and Pharmacy of Creighton University delivered at the Commencement Exercises, April 29, 1911.

to you which, impressed by the conditions of a moment like this when owing to circumstances you are especially open to suggestion, may prove helpful to you.

When I came out beyond the Mississippi last year to address the professional graduates of your sister university of St. Louis, feeling the same way I talked to them of some of the old universities, their professional schools, the influence of their graduates and the magnificent places these institutions hold in the history of education. While we are accustomed to think that we must be far ahead of the past in everything, just as soon as we analyze what we mean by progress we are likely to hesitate about making any serious claims for that great advance in our generation which is popularly supposed to be so manifest. In art, in literature, in architecture, in sculpture, in dramatic literature, in all the phases of poetry, we look to the past for models. We are quite free to confess that in none of these important departments of human endeavor is our generation doing great work. In some of them we are not even doing any serious work, and indeed, most frequently we are either neglecting important phases of artistic expression or merely imitating the past.

What is thus true for the other arts seems to me to be true in that highest of arts, education, by which the plastic human mind is formed to powers of expression. We may be " the heirs of

all the ages," but that does not perforce place us in the forefront of advance, and our accomplishment depends not on the fact that we are "in the foremost files of time" and therefore presumed to be necessarily ahead of our forebears, but on the ideals that we ourselves cherish and on the successful effort that we may make to fulfil those ideals. Such evolution as there may be, for we are only on the threshold of any knowledge of it as yet, is not automatic, but depends on the evolutionary factors at work at any given time. Human progress is absolutely dependent on human endeavor and human purpose. There are ups and downs that show most startlingly how great generations have been followed by small ones, how a time of fine achievement has culminated in a period given over to trivialities, and how people have occupied themselves with many things, been strenuous to the last degree, and yet have merely "fussed" and not really accomplished anything worth while for themselves or the race. Indeed, let us not forget that the most strenuous, busiest peoples have usually been occupied with trifles of no genuine import.

I have thought that it would be good for this generation, then, to learn and appreciate that the past has in many things been greater than we are —greater, often indeed, in the very things that we are coming to admire most in our time. Nothing is better for a certain self-sufficient complacency that is likely to characterize the narrow

small-minded man than to make him realize how long ago it is since some of his thoughts were first beautifully expressed by the human mind, and how sad it is to think that most of our good things were said before us. I am no mere *laudator temporis acti,* however, no mere praiser of the time that is gone just because it is gone, but a gatherer of something more than "unconsidered trifles," I hope, with the definite idea of pointing out the precious lessons that may be learned by an appreciative, sympathetic view of the old time and the men who did the work that laid the foundation for modern times.

You who are going out as this year's graduates, however, are much more interested in the present than in the past, and your Alma Mater looks to you for the good your influence shall accomplish in the future. While it is salutary for us to realize that we are not necessarily ahead of the past, it is still more important to remember that accomplishment at any time does not depend on the place of a generation in the scheme of evolution, but on the ideas and the ideals that the generation cherishes. You who are going out to be the professional representatives of education in this country for your generation must feel that on you to a great extent will depend what our generation shall accomplish. There has been the feeling in recent years that our professional men have not always done as much for their fellows as might be expected of them, or paid

back to the commonwealth as much as they owed for their educations. There has been a little the feeling that their education has been used too exclusively for personal benefits and too little for public good.

It has happened of late in a great many cases that when investigations into political corruption took place, while the little grafters were the uneducated, the big men, the "men higher up" were very often, indeed almost invariably, college men. When for instance "big business" is found corrupting legislatures and securing privileges for itself and flagrant dishonesty is discovered in insurance and banking and great railroad corporations, more often than not the men who are guilty are college men. The directors of large corporations who have allowed themselves to be used for dishonest purposes, and often for political trickery, were graduates and postgraduates of our universities very frequently. There has come to be the feeling that professional men have not that nice sense of honor, nor that sympathy for the weaker ones of the community that should characterize really educated men. There have been people who have even ventured to say that, as a consequence of this, the huge capitalized institutions that are being built up in our generation for educational purposes would fall under the ban of confiscation in a few generations because they were being used to the advantage of the classes against the masses. Such things have hap-

pened in history because property in mortmain is so likely to be used not for the benefit of living issues.

The really serious accomplishment of our generation will to a great extent depend on the unselfish ideals of its educated men and women. Not any supposed inevitable progress, but the high purpose of the members of our professions, shall mean most for the future of the country.

In this matter examples talk louder than words, and so I have thought that I should speak to you at a moment like this of the lives of some of the professional men whom I have known and most admired, and some of whose qualities represent the ideals towards which endeavor cannot but count for what is best in human nature. I have had the precious privilege of knowing personally some of the greatest men of my own profession in this generation. Pasteur had died just before I got to Paris, but Virchow and Gurlt, and Ramon y Cajal and Fournier and Nothnagel were teachers a share in whose intimacy I feel proud to have had. It is not, however, of foreigners whose problems are so different from ours that I would talk to you on an occasion of this kind, but of some of our own. There are two whose friendship is among the precious memories of life, whose careers may well serve as incentives and examples to the young professional man just entering on his career.

Though living in an earlier generation than

ours both of them faced many of the problems that we are now facing, they solved them in a way worthy of the great humanitarian profession to which they belonged and their lives may well be considered as lights for others in the pathway of life.

One of them was a Canadian, the other a New Yorker—at least by adoption. Both of them were the sons of poor families, both of them had to make their own way in life, one of them at least had to work his way through the university, yet both of them rose to be the acknowledged heads of their profession in their own departments and made American professional work known throughout the civilized world. Both of them received ample reward from their professional services, yet neither of them devoted himself exclusively to his profession but each realized that even for his own good it was better to have varied interests. Both of them accomplished in their avocations noteworthy deeds the memory of which will remain for many years to come. They are, then, types of the professional life of our time that are well worth the study of the younger men and the emulation of all of us who belong to professions and who want to have our professions stand for what is best for our time, our country and ourselves.

The lives of such men are all the more significant for the young man beginning a professional career now, because there has been not a little

of the feeling in recent years that education sometimes produces only a refinement of selfishness or that there is grave danger of its doing this, as illustrated by many examples prominent in our time. There is a good reason for the complaint that our educated classes are not taking as much interest in the government of the country, in politics in the better sense of the word, and in the good of the community as they are bound to by the advantages that they have had. They forget evidently that, if they are better developed women and men, it must mainly be in order to help those who have not those advantages to get along in life in such a way that there shall be no industrial suffering and no serious social injustice. Instead of that they are apt to feel that politics is a dirty business and philanthropy is taken up only with gloved hands, and little real good is done.

I have thought, then, that the telling of the story of the lives of two men who, under very different circumstances, showed their readiness to sacrifice their prospects for the sake of principles, and whose one idea was the accomplishment of duty with an eye single ever to helpfulness to the community, might be of service to young professional men about to go out to their life work. It is only inasmuch as we shall somehow get an unselfish generation, ready to do things for others and for the commonwealth, that this precious heritage of liberty passed on to us by our forefathers will be preserved.

The first of the two men whose lives and examples I shall call to your attention is Sir William Hingston, who about four years ago died as the dean of the medical profession of Canada. Twenty-five years before his death he had been invited to deliver the address on surgery before the British Medical Association. Not long before his death he had been one of the Presidents of Honor at the meeting of the British Medical Association at Toronto. For very nearly fifty years of continuous service he had been one of the surgeons at the great Montreal Hospital, the Hôtel Dieu. His life was full of services to the poor, service to his professional brethren, for he was one of the most faithful attendants at medical society meetings and an organizer in several of them and one of the great Canadian teachers of surgery. When death took him few men were as highly respected by their fellow citizens anywhere on this Western hemisphere as Sir William Hingston. All the city mourned for him. He was a Life Senator of Canada and a special session of that body was held at which from all sides were heard hearty praises of him. The Germans, the French, his compatriots the Canadian Irish, the Hebrews of Montreal all proclaimed him a special friend of their people. Evidently here was a man whose life is well worth while knowing something about and especially by those who, as members of his or a sister profession, would be glad at the end to

look back on a career that had meant so much as his.

Seeing how high are the values we are likely to accord to early opportunities for education and culture, it might be expected that to attain such success in life a man must have had few or no handicaps in his youth. As a matter of fact, Sir William Hingston had no opportunities except those which he made for himself. He was the son of a man whose death left his widow in debt. From boyhood years young Hingston had to help in the support of the family. Judge Daly of New York, the brother of Augustine Daly, our most successful dramatic manager, once said to me, " The best education I know to give a boy is to put his widowed mother on his hands when he is fourteen or fifteen and let him have to support her. If there is anything in him worth while, it will come out." That was the way Augustine and himself were left. Hingston worked for years in a drug-store, somehow succeeded in finding time to study medicine, in spite of an employer who added work so as to prevent the loss of so good an employee, entered the medical school, worked his way through and, while all the while helping his mother, somehow succeeded in saving a little money.

At the age of twenty-one he had his degree as a doctor of medicine and about $460.00 to his credit. It might be thought that he would reserve this sum to assure a livelihood while proceeding

to establish himself in practice. No! He took a sailing vessel for Europe and somehow succeeded in living over there for some three years on $460! At Edinburgh he became a favorite of the great Syme, who wanted to make him his assistant. He was one of the few young men whom Sir James Y. Simpson ever took to visit his patients with him. Even the Edinburgh experience was not enough. Young Hingston went to London. In order to save money he lived five miles from St. Bartholomew's and walked night and morning. After his London experience he went over to the Continent and came intimately in touch with the most brilliant surgeons of the time in Paris, Berlin and Vienna. How he lived and made his way the Lord only knows. He came back to Canada without a cent, but with the most precious fund of experience and after having attracted the attention of the best men in Europe.

He settled down in a poor quarter of Montreal under the necessity of supporting himself from the very beginning of his practice. The following year typhus fever came to the city. He nursed so many poor people through it that his name became a household word among them and his reputation was established. Gradually he moved into better and then better quarters, until he was looked upon as the leader of the surgical profession in Montreal. He performed a number of operations that had not been done before his

time in this country. While busy with his professional work and making money, he came to be looked upon as one of the best friends of the poor of the city and as a great teacher and hospital surgeon. Then there came a crisis in the political affairs of Montreal. There were religious prejudices involved. Dr. Hingston was asked to serve as mayor and was elected by a substantial majority. Without giving up his practice, he succeeded in giving the city such an excellent administration that he was elected a second time without opposition. A third election he refused. Queen Victoria made him a Knight and he was appointed as a Life Senator to the Dominion Parliament. When he died at the age of seventy-eight, few men were so thoroughly respected as he. He had dared to turn aside from his professional work to devote himself to the good of the community. He had succeeded in accomplishing his purpose. He had done what he had done all his life, achieved success in spite of obstacles. Notwithstanding the handicaps of his early years he was one of the cultured educated scholars of this generation. He had had a single year of Latin, when he was about fourteen, and he returned to it later and mastered the language. French he used almost like a native. German he had begun while in Germany and he increased his mastery of it. In spite of this power to do things he was never self-centred. Above all he was unselfish, his thought was for others; and he

has left a name that will be in benediction for many generations. Very probably he might have left his children more money had he paid more exclusive attention to his profession. Instead of that he has left them an honored name and a substantial heritage for a beginning in life. He did not, as Justice Hughes, while governor of New York, said most of the men of our generation were doing, accumulate a large corruption fund for his children, but he left them what is much more valuable and stimulating of what is best in them, a fine example of unselfish devotion to the community.

The other distinguished example is Dr. Thomas Addis Emmet, who is still with us and I hope will be for many years. He had a better opportunity for early education than had Sir William Hingston, for instead of being the son of a farmer he was the son of a university professor, but when he graduated in medicine at Jefferson, at the age of twenty-one, it was absolutely necessary that he should make money. He came near accepting a position in South America because of the salary attached to it. In New York his work on the Island at the Charity Hospital soon attracted attention. This was the day of ship-fever, as the dread typhus was called familiarly. Dr. Emmet went through two epidemics of it with the Irish emigrants on the Island; catching the fever twice himself, though fortunately surviving it. Then came cholera. It

is hard for us to understand the awful epidemics of cholera that occurred fifty years ago. On two occasions Emmet found, on making his daily visit to his ward, which consisted of a barrack on the Island, that every living soul whom he had left there the day before, both patients and orderlies, were dead. Those were days that tried men's souls, and yet there was no question of physicians abandoning their patients in cowardly fear, but on the contrary faithfully attending them in spite of danger and difficulty.

Dr. Emmet's opportunity came with the opening of the Women's Hospital in New York. At first in connection with Dr. Marion Sims, and then later by himself, he showed that it was possible to save women from the awful suffering consequent upon lesions that followed complicated or unfortunately delayed childbirth. Before this time these serious pathological cases often involving severe suffering or almost unbearable discomfort or inconvenience, had almost as a rule been considered quite hopeless.

No wonder Dr. Emmet's successful surgery in these cases soon attracted the attention of his colleagues not only in this country but in Europe. In the course of ten years patients came to him from all parts of this country. His reputation spread, and his benefits to suffering womankind were acclaimed in Europe and even distant India.

His best work was done in plastic surgery, some of it as good as any that has ever been

done. How he succeeded so well with it in the old days of septic conditions is indeed hard to understand, but his efforts were greatly helped by the careful cleanliness that he insisted on and that was seconded so well by some of his assistants and his fine old nurse. He revolutionized the department of women's diseases and above all taught the profession how many of the unfortunate consequences of ill-directed childbirth might be prevented. There is probably no one of his generation in this country to whom we owe more for having prevented suffering and cured apparently hopeless conditions than Dr. Emmet. Only Dr. Joseph O'Dwyer's name deserves place beside his for saving children's sufferings as Emmet did their mothers'.

His colleagues here and abroad urged Dr. Emmet to write a book detailing his experiences and making his results available for others. He was so busy that he could not find the time. He tried to do it at night, but in spite of the most resolute endeavors would sleep on his chair and get nothing done. A European colleague to whom he confided his difficulty told him of a similar experience of his own and his solution of the problem. He suggested the making of a narrow bench without back or arms, from which if one fell asleep a fall was inevitable. Emmet still has the bench. It is some eighteen inches long by twelve inches wide. I have often sat on it. He succeeded in finishing his text-book.

In the next few years it was translated into three foreign languages, and it added greatly to our medical prestige abroad. It went through a number of editions in this country. The night work necessary for its original production surely looks like burning the candle at both ends. It might be expected that a man having recourse to such makeshifts to get his work done would infallibly break down before attaining old age. Emmet is eighty-four and in vigorous health. He has finished two books on subjects apart from medicine in the last five years and he takes an active interest in all the important questions of the day. It is not work but worry that kills, and the example of Emmet and of Sir William Hingston, both of them among the greatest surgeons of our generation yet active workers beyond threescore and ten, illustrates this very well. Their great contemporaries, Gladstone, Leo XIII and many another grand old man survived well beyond the Psalmist's limit still able to do work to the very end. My own great teacher Virchow, at the age of eighty-one, succumbed not to work but to a trolley car.

Just one word with regard to Dr. Emmet and then I am nearly through. Just fifty years ago this month Fort Sumter was fired on and, though neither side realized it, the beginning of a great struggle was sounded. Dr. Emmet was born in Virginia. When he heard that his state had seceded he felt that it was his duty to go with

her and fight under her standard. He had been nearly twenty years away from her, but in a loyal mind that did not cut the thread of obligation. On the very last train leaving New York that was allowed to go through to the South Dr. Emmet was a passenger. His passage had been engaged on the last steamer that was to sail, but at the last hour the United States government refused the permit. Dr. Emmet presented himself to President Jefferson Davis and offered his services for anything for which they would be useful. The president of the Confederacy said to him, "Go back to New York, Dr. Emmet; we have more doctors now than we know what to do with and, without in any way compromising yourself, you may be of more service to us in the North by helping to mould public opinion than you can be in the South." It was months before Emmet succeeded in getting back across the lines and for weeks his family did not hear of him. All during the war he lived in New York, not without grave danger, for party and sectional feelings ran high. On a number of occasions without doing anything treasonable he was of help to his state and the cause it had espoused.

I know nothing of the life of a professional man in recent years that deserves more attention than this action of Dr. Emmet's. It was a deliberate sacrifice of his prospects, of his career, of his success in life for the sake of his idea of duty. It was quixotic many men will say, but

what we need in the modern time is more quixotism. Do not forget that in Cervantes' great prose epic, the idealist Don Quixote rides ahead and is followed by the realist Sancho Panza on his donkey. Always in life the idealist rides ahead and the man who like Sancho Panza is always asking, "What is there in this for me?" rides behind. When men are ready to make sacrifices for their idea of duty, then their generation can expect significant things from them. Those were trying days fifty years ago. But there are trying days to-day. The question often comes up whether a professional man shall make certain sacrifices for the benefit of the community, or whether he shall think that he is bound to think only of himself and his career and of his family. Seldom is a man asked to make the sacrifice for patriotism that Emmet was asked. The smaller sacrifices are perhaps more difficult because there is less of ardent heroism that makes for them. Just inasmuch as our professional men in this country are ready to make personal sacrifices, however, shall the country reap the advantages of them and our heritage of liberty and the opportunity for the pursuit of happiness be preserved for us.

The Confederacy lost in the great struggle that it had undertaken for what seemed the right to the South. As is always true of the man who fought an unequal struggle from a distance, sympathizing with the losing side yet unable to

do anything to help, he probably felt more the misfortunes of the Confederacy than those whose constant occupation prevented them from thinking much about what was happening. Like many another adherent of the lost cause he was not disheartened but went on with his work as best he could, and kept himself from the fruitless occupation with regrets. Besides his work as a surgeon he made for himself another great occupation of mind. Very early in life he became interested in the original documents that are the basis of our American history. He began the collection of these even as a young man, and as time went on he became known as probably the greatest collector and the best authority on this subject. On the question of autographs of American statesmen he was constantly referred to, and his own collection of the autographs of signers of the Declaration of Independence and makers of the Constitution became simply invaluable.

His life became a typical example of what a hobby can do for a man in furnishing such diversion of mind and true recreation as guarantee against that concentration of nervous energy on a single subject that leads to nervous breakdown. All the great men of Emmet's generation, and especially those who lived long lives of mighty usefulness, are noted for their hobbies. Gladstone, turning aside from politics and statesmanship, devoted himself to commentaries on Greek authors, Leo XIII finding his recreation

in Latin poetry, Virchow turning from pathology to applications of sanitary science—all these serve to illustrate that a difference in work constitutes the best kind of recreation. The man with the hobby uses an entirely different part of his mind in the pursuit of his favorite avocation and thus rests himself from the strenuous work of his vocation.

Such men often accomplish a great life's work as much or more than many men, in all their serious hours, in the time that they consider given over to mental diversion. The human mind cannot be unoccupied, it cannot secure rest by absolute freedom from occupation, it must do something and its real rest consists in doing something different from its previous occupation. Dr. Emmet's hobby was immensely valuable for the historians of the country, and his name will remain in honor among those who realize how many of the precious documents that he gathered from all parts of the country, and especially at the South, might have been lost or destroyed, but for his interest in them, his recognition of their value and his willingness to pay good sums to secure them from destruction.

Finally, toward the end of his life, there came the question of a disposal of this collection. In order to keep it together he sold a half interest in it to Mr. Kennedy, the president of the Lenox Library in New York, for $150,000. He himself had probably spent over a quarter of a mil-

lion on it. Now known as the Kennedy-Emmet collection, it is to be housed in our beautiful library building in New York and is a monument forever to Emmet's hobby. Probably nothing was so good for him as this cultivation of an outside interest. To every professional man I say, get a hobby. If you devote yourself to your hobby you get a complete rest from your other work, for the portions of your brain that are employed in your daily occupation may rest while the blood is diverted to other portions. It is impossible to rest by having the mind free from thought. It will not be free from thought. Whenever you wake you will find that you have been dreaming, when you come to from a day-dream you find that your mind has been occupied with something. The thing to do is to direct its occupation into a channel so different from the ordinary avocation that the portions of the brain ordinarily used will get a rest. Trivial amusements will not rest, even vaudeville is only a makeshift, healthy outdoor sport will do it, but a hobby is the best preservative for health and strength of mind that we have.

Though a native American whose family interests had become deeply rooted in this country, Emmet never forgot how much he owed to the race from which he sprang and which needed so much help to enable it to secure even a modicum of liberty for its people. All during the Land League movement which promised at last to free

the Irish peasants from the grinding exactions that had made life so miserable for them as to be almost impossible, Emmet was prominent, ready to give up his time, his money, his influence, all his powers to the cause. When Gladstone's Home Rule Bill brought an appeal to the country a large fund was needed for the election expenses of the Irish members and Emmet himself guaranteed the raising of a hundred thousand dollars, some twenty-five thousand of which he contributed himself. Though by no means a wealthy man, the feeling that at last the cause of justice for the Irish peasants so dear to his heart was apparently near its solution led him to make this great sacrifice willingly and gladly. When the growing physical disabilities of age narrowed his professional activities, but without dimming his intellectual faculties, Emmet set himself to write out the story of Ireland under English Rule in which documents that incontrovertibly show the conditions that existed in the latter half of the nineteenth century were presented. Beyond his eightieth year, he is still working effectively for the cause nearest his heart.

It seems to me that the lives of these two men, who in the midst of the busiest of professional careers made the time to devote themselves to their duties towards the community as they saw them, might well have a place in your memories in the direction of the careers that are opening up to you. There has been so much of looking

at the worst side of life in our time, so much of what has so aptly been called muck-raking, that it seems well to emphasize the fact that the good that men do lives on as a precious example. While it is mainly our politicians who have been the subject of aspersion, professional men have not been spared. It has been said that our lawyers in the present generation, instead of helping us—that is the community—in the great work of applying law so as to make it just for all, as did such great constitutional lawyers as Marshall and Story at the beginning of our history, have more largely devoted themselves to showing great corporations and wealthy men how to steer round the law and avoid its penalties, though the ordinary citizen without such aid was often rendered helpless in competition with them. It has sometimes even been said that physicians are much more intent on making money out of wealthy patients than in making medicine, and that many of our great surgeons are occupied with surgical operations for which there is often no crying need except that money is to be made out of them. Fortunately such aspersions are not true for the great mass of either profession. They are no more true than it would be to say that our dentists are much more occupied inserting various artificial dentures than with preserving the original natural teeth. There are temptations in professional work, first to preoccupation with self and secondly to preoccupation with the making

of money, that are quite unworthy of professional life and dignity. The professional man receives his education out of the great body of knowledge that has been accumulated by his predecessors in the profession; he is bound therefore not alone to make a success of his profession, not alone to make money out of it, but to help to extend its influence. A physician must not only make money but must make medicine. His professional experience must help his brother. A lawyer must not only make money, but must make law more just than it was to the community before, so that his life work shall count for something for men, and not alone for himself. My favorite hero among the professional men of the nineteenth century, Pasteur, once said something that seems to me to sum up the message that I should like to leave with you. Here it is:

"Young people, young people, confine yourselves to those methods, sure and powerful, of which we as yet know only the first secrets. Above all, whatever may be your career, never permit yourselves to be overcome by scepticism, both unworthy and barren; neither permit the hours of sadness which pass over a nation to discourage you. Live in the serene peace of your laboratories and your libraries. First ask yourselves, 'What have I done for my education?' Then, as you advance in life, 'What have I done for my country?' so that some day that supreme happiness may come to you, the consciousness

of having contributed in some measure to the progress and welfare of humanity. But whether our endeavors are more or less favored by the circumstances of our life, on approaching the great end we must have the right to say to ourselves, 'I have done what I was able.'"

You might perhaps think that such expressions were due to the proneness to introspection of our time, but they are to be found in every period of the history of medicine. For instance, more than five centuries ago a distinguished English surgeon, the fifth in the succession of those great surgeons who in the thirteenth and fourteenth centuries did so much to illuminate that glorious period of scientific surgery that we have come only recently to appreciate, John Arden of Norwich, having studied down in Italy and probably in Paris and come home to practise surgery successfully, laid down in one of his fine old books on the subject what the qualifications of a surgeon ought to be. He wrote in the rather crabbed mediæval Latin of his time, which I must translate for you, but his sentiments appeal to the human nature of all times. They represent what is needed so well for professional men, especially as it seems to me in our time, that I shall read them to you. Having described one of his operations, he adds what he calls "a description of the qualities and conditions which ought to be in the surgeon that performeth this or any other operations in chirurgery. First, that he be devout; second, charitable to the

poor; third, that he use few words; fourth, that he avoid drunkenness; fifth, that he be chaste both in words and gesture as well as to fear not; sixth, that he do not undertake incurable diseases." It would need but slight modification of the phraseology to make this apply quite as well to the legal as well as the medical and dental professions. All of the first five conditions need no modification. As to the sixth I suppose that a great lawyer would say that it was quite as important not to undertake what are evidently unjust cases as for the surgeon not to undertake incurable diseases. John Arden was only re-echoing what is to be found in the surgical text-books of many of the great surgeons of his time. They realized very clearly the necessity for the surgeon being a helper and exemplar to those around him as well as a successful professional man.

In closing what I have to say to you to-night of your professional obligations it is not alone that I feel deeply how much the needs of our time demand that with professional life there shall always be community interests, but I have also the consciousness that I am fulfilling one of the best traditions in our professional history. From the days of the Hippocratic Oath, and even long before it, this side of our duty has always been emphasized by the great leaders of the profession. The men whose names we now recall with most reverence, all down the centuries

of medical history, have felt called upon again and again to remind professional brethren of their community obligations and their duties towards their fellows. One of the most distinguished of our great English forefathers, dear old Dr. Caius, whose English name was Key and who was the founder of Caius College, which the English call Key's College, at Cambridge, was particularly emphatic in this matter. He had brought back from Italy to England with him in the first half of the sixteenth century the New Learning in medicine, and he introduced into England the practice of dissection. How well he could do that, and how thorough were his interests in scientific medicine, may be judged from the fact that he had been a room-mate of Vesalius at Padua and the prosector at the University there for a time.

The message that he gave to his students in England seems to me to sum up all that I would like to be able to feel that I had said to you. In his own quaint old-fashioned English and ancient spelling it will probably be even more forcible than if I tried to modernize it. He said:

"Man beyng borne not for his owne use and comoditie alone but also for the common benefite of many, (as reason wil and al good authores write) he whiche in this world is worthy to lyve ought al wayes to have his hole minde and intente geven to profite others."

CHRISTIANITY AND CIVILIZATION

"Consider the meadows, and the flowers therein, which are more sparkling than any gold, and more elegant and transparent than all kinds of precious stones. Consider the limpid streams from their fountains, the streams which like oil flow noiselessly out of the earth. Ascend to heaven, and behold the lustre of the sun, the beauty of the moon, the stars that cluster like flowers. 'Why, what is all this,' say you, 'since we do not make use of them as of wealth?' Nay, we use them more than wealth, inasmuch as the use thereof is more needful, the enjoyment more secure; for thou hast no fear lest, like money, any one should rob thee of them."—St. Chrysostom.

CHRISTIANITY AND CIVILIZATION*

WHEN I take up the subject that I am to discuss this evening, the influence of the Church on civilization, and which the committee tells me I must somehow boil down into a half-hour's talk, I am reminded of a little picture that hangs on my wall at home, a copy of one of Botticelli's panels. It tells a story with which you are all doubtless familiar, but which it may be of interest to recall because it will bring back vividly to many of you the early schooldays when first you heard it. In the picture St. Augustine, in the full panoply of a bishop with cope and mitre and even episcopal gloves, which are all introduced by Botticelli, with thorough pre-Raphaelitic disregard for time and place and conventionalities, because they enable him to put color and variety into the picture, is represented as walking along the sea-shore. According to the story, he is supposed to be thinking about the mysteries of the Deity, and wondering why he cannot penetrate more deeply into them in spite of all his efforts. His profoundest thinking is balked by them. The more he ponders over them, the more impenetra-

* The material here developed was gathered for one of the addresses before the Laymen's League at Carnegie Hall, May 6, 1911. It has been somewhat amplified for publication.

ble he finds them, and the less capable he is, not only of exhausting their meaning, but even of satisfactorily comprehending them. As he walks thus inwardly occupied, he notices a little boy kneeling on the sand. On him Botticelli has put a picturesque red tunic. The boy is busily engaged dipping water from the ocean into a little pool at his knees.

That is all there is in the picture. The sequence of the story you know. St. Augustine stopped to pat the little fellow on the head and ask him what he was doing. The boy with childish frankness replied at once, "Me! Why, I am emptying the ocean." St. Augustine is said to have laughed at him kindly and then to have passed on, taking up his contemplation once more. It was not long, however, before he realized that what he was trying to do was just exactly what the boy whom he had passed was engaged at. He was trying, with the little spoon of a human mind, to empty the ocean of an infinite God into a tiny human pool of knowledge on the beach of time. According to the story, then, he went back to greet the boy once more, this time not in laughing amusement, but in serious sympathy. He could not find him. His conclusion was that an angel had been sent to teach him the precious lesson of the intellectual relation of God to man.

When I am asked to tell the story of the relations of Christianity to human progress in a

scant half hour, it seems to me that I must feel that I am required to attempt to spoon the ocean into a little pool, for there is no great development of humanity in which the Church has not been an important factor. It is true that there are many people who seem to think that since the Church is mainly interested in other-worldliness,—that is in teaching people how to live in this world so as to prepare for another world,—that, after all, she has had very little to do with human progress. There are not a few people, in our time particularly, who are quite ready to declare emphatically that because of fixing man's gaze on another world Christianity has really hampered human progress, and that great advances have only come when the influence of the Church has not been much felt. They would insist that the great advances of our own time are due to the fact that the hold of the Church on human minds has been greatly lessened, and especially that the more penetrating intellects have been emancipated from the dominance of religious thought.

Men who talk thus, however, are likely to know very little of past accomplishment and have very little true appreciation of present-day work. The German poet Hauptmann declared that a generation in whom the spirit of religion was absent might very well build barracks or railroads, but it usually failed to add to the great monuments of human artistic accomplishment. Many a philo-

sophic thinker of the modern time, even though himself without active sympathy for any particular form of religion, has yet realized the importance of the feeling of other-worldliness in lifting men above the sordid cares of this world and raising them to a plane of expression higher than worldly motives could furnish.

Professor William James, in his lectures on "The Varieties of Religious Experience," speaks of it as "a feeling of being in a wider life than that of this world's selfish little interests; a conviction not merely intellectual, but as it were sensible, of the existence of an Ideal Power." There comes, he says, "an immense elation and freedom as the outlines of the confining selfhood melt down, and a sense of the friendly continuity of the ideal power with our own life and a willing self-surrender to its control." He adds, "The sense of enlargement of life may be so uplifting that personal motives and inhibition, commonly omnipotent, become too insignificant for notice, and new reaches of patience and fortitude open out, fears and anxieties go and blissful equanimity takes their place." In a word, the inhibitions that so disturb human accomplishment at its best fall away and, with less anxiety about the immediate future, men give themselves under the influence of religious feeling to the best that is in them and to accomplishment higher and nobler than would otherwise be possible.

While we have been so prone to think of our

own comfortable age as progressive far beyond older periods when men had to struggle against many disadvantages, our appreciative study of the past during the last half century has made us realize how much was accomplished before our time. Especially is this true as regards the art, the education, the architecture, the arts and crafts, the music, even the science and the mathematics of the Middle Ages. We used to know nothing or so little about them that we concluded that the reason for our lack of knowledge must be because there was nothing worth while knowing in them. We have learned, however, that in many things they achieved the most wonderful results. There are some men in recent years who know most about the subject who have insisted quite seriously that the Dark Ages should really be called the Bright Ages. In the days when men knew nothing about them and concluded there must be nothing in them, the Church was the favorite object of blame for this backwardness or actual failure of accomplishment. Now, however, that we have come to appreciate their true worth, there is no doubt that the Church must be considered as the main source of their achievements. Every advance in history consequent upon the study of original documents has brought this out clearer and clearer. The Church that so many set down as the hamperer of human advance was the mother of progress, the patroness of the arts, the protector of litera-

ture and education, the founder of universities, nay! even in spite of so many misapprehensions to the contrary, the fosterer of the sciences.

Those who know their history readily appreciate how much the Church has done to encourage the great expressions of the human faculty. John Fiske was not likely to be partial in his estimation of all that the world owes to the Catholic Church for its fostering care of the arts and literature, and above all was not likely to be prejudiced in favor of the Dark Ages as compared with the classical ages, yet it was he who in his book on "The Beginnings of New England,"—one of the last places in the world perhaps that one might expect to find it,—said:

"*It is hard to find words fit to express the debt of gratitude which modern civilization owes to the Roman Catholic Church.* When we think of all the work, big with promise of the future, that went on in those centuries which modern writers in their ignorance used once to set apart and stigmatize as the 'Dark Ages'; when we consider how the seeds of what is noblest in modern life were then painfully sown upon the soil which Imperial Rome had prepared; when we think of the various work of a Gregory, a Benedict, a Boniface, an Alfred, a Charlemagne, *we feel that there is a sense in which the most brilliant achievements of pagan antiquity are dwarfed in comparison with these.*" (Italics ours.)

As a matter of fact it takes only a little con-

sideration of the achievements that lie at the basis of our modern civilization to recognize that the Church has been not only the patron, but the inspiration of most of the great ideas that humanity will not willingly let die. Just as soon as the Church could come out of her hiding-places after the persecutions, beautiful buildings so appropriately named basilicas—houses of the King—began to spring up. Such remains of them as are preserved for us show us men thinking deeply and solving art problems seriously in the service of religion. The great impulse to architecture, inspired by religion and fostered by the Church all down the centuries, meant more for one great artistic form of human expression than anything else. Romanesque, Gothic, Renaissance architecture all came from religious inspiration, and even here in America the only thing approaching originality is the Spanish-American style of the Franciscans of the Southwest.

After the housing of Emmanuel—the God with us of their fervent faith—suitably and beautifully, yet in such a way that the religious edifices were themselves a mode of education for the people, there came the care and the housing of God's poor. Hospitals began to spring up, and already in the fifth century we hear of a great set of hospital buildings, erected by St. Basil at Cæsarea, which constituted a veritable hospital city called the new town. Such institutions had existed before among the Greeks, but never devoted to the

care of the poor. They had been the health resorts of the better-to-do classes, representing Greek recognition of care for the mind and the body at the same time, but now the poor were welcomed into these Christian institutions and a new art, that of charity towards all, was practised among men.

The same spirit that gave new birth to architecture touched with new vigor all the arts. Gradually the progress of luxury made life in the cities of the old Roman Empire very difficult for Christians, however, and the disturbances due to the coming in of the barbarians made it practically impossible for men to have an interest in art, literature, and the erection of enduring monuments. The cities had attracted to themselves all the best life of the country, and labor had lost its old place of honor and was looked down upon. When life had become so artificial in its over-refinement that men were accomplishing nothing, fussily engaged in the strenuous life of the cities, but without time to devote to thoughts that endure or expressions that are to mean much for other generations, there came the foundation of the religious orders, in whose institutions far from the cities there was the time and the peace and the opportunity to devote to the arts and literature, and above all to education and the preservation of the old classical literatures. It was in these institutions particularly that marvellous accomplishments were made by keeping

alive some admiration at least for the intellectual side of life.

Any one who thinks, however, that devotion to the intellectual and the spiritual life was the sole occupation of the monks misses entirely the significance of their place in the life of the Dark Ages. The tradition of "lazy monks" is contradicted by their history. The rule of St. Benedict, which the monks followed, made manual labor a duty and dictated such intervals of occupation of body and mind as made for health and the healthy expression of all man's faculties. Many a son of the nobility joined these orders, and followed the rule and took his turn with the others in the doing of manual labor. Even sons of kings were proud to obey the rule of St. Benedict. The example of these wise and learned men lifted work to a new dignity. For centuries all work had been done by slaves and so it was considered something of a disgrace to engage in it. There were probably twice as many slaves as free men in the Rome of the early Empire when it was most populous,—nearly a million of slaves out of a million and a half of population. No wonder that degeneration came and that disintegration of society set in with the coming of the barbarians, for there was no one but slaves to do the work of the world; and when manual labor is not performed there are likely to be many ebullitions of human energy beyond the normal bounds. Plenty of work that makes for any-

thing but the happiness of mankind is always found for idle hands.

Besides restoring the dignity of labor the monasteries performed another precious service to mankind in lifting poverty to a place of respect. This was needed quite as much as the reversion of feeling with regard to labor. Under the Roman Empire money had come to be as much thought of as in our own time, and people failed to understand how any one could possibly *choose* to be poor, even though thus he succeeded in putting off the cares of wealth and gave himself an opportunity to live his life for the sake of higher things. In the monasteries men deliberately chose to be poor and submitted themselves to the rule of daily manual labor. There are many people of the modern time who are impatient with monasticism because of its wedding to poverty, to use St. Francis' expressive phrase; not a few who insist that such relation must inevitably lead to failure in life, or at least keep people from exerting all their best energy. Poverty is supposed to dampen ardor, lessen enthusiasm, hamper initiative, and in other ways make life less full of accomplishment than it would otherwise be.

It may be said, however, that there are many serious thinkers of our generation who do not agree with this impression of the paralyzing effect of poverty, but, on the contrary, realize that detachment from earthly goods may well

prove a source of the highest and best incentive. Some of them have expressed themselves rather strongly on this subject, and perhaps no one has stated his mind more emphatically than Professor William James, who, in his lectures on "The Varieties of Religious Experience," said:

"Among us English-speaking peoples especially do the praises of poverty need once more to be boldly sung. We have grown literally afraid to be poor. We despise any one who elects to be poor in order to simplify and save his inner life. If he does not join the general scramble and pant with the money-making street, we deem him spiritless and lacking in ambition. We have lost the power even of imagining what the ancient idealization of poverty could have meant: the liberation from material attachments; the unbribed soul, the manlier indifference; the paying our way by what we are or do and not by what we have; the right to fling away our life at any moment irresponsibly—the more athletic trim, in short, the moral fighting shape. When we of the so-called better classes are scared as men were never scared in history at material ugliness and hardship; when we put off marriage until our house can be artistic, and quake at the thought of having a child without a bank account and doomed to manual labor, it is time for thinking men to protest against so unmanly and irreligious a state of opinion. . . . I recommend this matter to your serious pondering, for it is certain

that the prevalent fear of poverty among the educated classes is the worst moral disease from which our civilization suffers."

People of the modern time, especially those not personally acquainted with religions, are sometimes prone to think of monasteries as homes of rather impractical people, who either failed to secure what they looked for in ordinary life, or who were disappointed in some way in the world, or else who lacked by nature the initiative to do things for themselves. Any one who knows members of religious orders intimately is not likely to think so, but I feel that in so stating it I am expressing without exaggeration notions that are quite commonly held on this subject. Mediæval religious, and especially those who lived in the Dark Ages, are ordinarily supposed to have been so much occupied with other-worldliness and mysticism and the thought of saving their own souls, selfishly concentrated on this one object, whenever through more or less inevitable tendencies in human nature abuses did not creep in, that of course no great contributions to civilization, and above all to practical life and happiness, could be expected from them.

The actual history of the religious orders is exactly the opposite to this popular impression. At a time when political and martial disturbances made happiness in life almost impossible for people, and when above all those who had aspirations after the intellectual life and the doing of

things for others could find little to satisfy them, the old-time monasteries provided abundant opportunities and furnished ample facilities for those who wanted to get away from the disturbed conditions of the times. Only those who have studied carefully the actual history of the monasteries can have any idea of the accomplishment of the monks.

There are departments of human accomplishment in which we of our modern generations are not likely to think of monks as at all active, yet in which there are wonderful chapters of the history of civilization. At the most, credit is given to them for having preserved in their libraries the old classics and carried on the traditions of education. There are very few who realize that to them more than any others we owe the development of the universities, the evolution of architecture, the development of music, the foundations of the great principles of democracy, and above all the restoration to a proper place in the estimation of men of manual labor. The tradition that monks were lazy and that only those who had lost ambition and the power to do work for themselves applied for entrance to orders, or remained content in them, has received many severe jolts in modern times from those who have been brought to study for their information the actual history of monastic establishments.

Until our own deep interest in these subjects was aroused the men of our time were not likely

to think of the monks as making great contributions to scientific agriculture, to the drainage and irrigation of the soil, to the development of the principles of correct forestry, and even to the successful marketing of agricultural products, but the story of all these may be readily found by any one who looks for it. Ten years ago Dr. Henry Goodell, the President of the Massachusetts Agricultural College, in an address at the Summer Meeting of the State Board of Agriculture of his State, told the story of the "Influence of the Monks in Agriculture." He said:

"Agriculture was sunk to a low ebb. Marshes covered once fertile fields, and the men who should have tilled the land spurned the plow as degrading. The monks left their cells and their prayers to dig ditches and plow fields. The effort was magical. Men once more turned back to a noble but despised industry, and peace and plenty supplanted war and poverty. So well recognized were the blessings they brought that an old German proverb among the peasants runs, 'It is good to live under the crozier.' They ennobled manual labor, which, in a degenerate Roman world, had been performed exclusively by slaves, and among the barbarians by women. For the monks, it is no exaggeration to say the cultivation of the soil was like an immense alms spread over a whole country. The abbots and superiors set the example, and stripping off their sacerdotal robes, toiled as common laborers. Like the good

parson whom Chaucer portrays in the prologue to the Canterbury Tales:

> This noble ensample unto his scheep he gaf
> That first he wroughte and after that he taughte.

"When a papal messenger came in haste to consult the Abbot Equutius on important matters of the Church, he was not to be found anywhere, but was finally discovered in the valley cutting hay. Under such guidance and such example the monks upheld and taught everywhere the dignity of labor, first, by consecrating to agriculture the energy and intelligent activity of freemen often of high birth and clothed with the double authority of the priesthood and of hereditary nobility, and second, by associating under the Benedictine habit sons of kings, princes and nobles with the rudest labors of peasants and serfs."

President Goodell has told the story of how the monks cleared and reclaimed the land, transformed fens into forests, marshes into gardens, and swamps into beautiful domains. As he says, "A swamp was of no value. It was a source of pestilence. But it was just the place for a monastery because it made life especially hard, and so the monks carried in earth and stone, and made a foundation, and built their convent, and then set to work to dyke and drain and fill up the swamp, till they had turned it into fertile plow-land and the pestilence had ceased."

Monasteries were not fully independent institutions, as a rule, but were houses of great orders spread throughout the world and retaining organic connection with other houses in many countries. As a consequence, while there was opportunity for the interchange of books and of scholars by which libraries were enriched and schools aroused to new life by vigorous young teachers from a distance, there were many material advantages that could be shared among them. We know, too, that these advantages were recognized and fostered. Plants of various kinds that had been successfully grown in one monastery were passed on to others, adding greatly to the variety of farm products, but above all making for the selection of those that were most valuable for any reason. Successful forestry became the special achievement of the monasteries because of the opportunity they had to take advantage of the long years of experience of sister institutions in this line. Breeds of cattle were improved and varieties introduced that were specially suitable to certain conditions. The knowledge thus attained by the monasteries was passed on to their tenantry until it became a proverb that the monks and their people were the best farmers. President Goodell has insisted on this in the address that we have quoted from.

It is no wonder that in concluding his address President Goodell should have paid a noble tribute to the monks. His own studies in agri-

culture had reached a point where he was able to appreciate their work. Preceding generations, themselves ignorant of scientific farming, unknowing how to make real progress in agriculture, had of course been quite unable to appreciate the work of the monks and had even despised it. Our generation has come back to their level and can look on them as brothers. President Goodell said:

"My friends, I have outlined to you in briefest manner to-day the work of these grand old monks during a period of fifteen hundred years. They saved agriculture when nobody else could save it. They practised it under a new life and new conditions when no one else dared undertake it. They advanced it along every line of theory and practice, and when they perished they left a void which generations have not filled."

President Goodell knows, too, that what the monks did in the old time in Europe long before the so-called Reformation they did in America after that event in the countries that still remained faithful to the old Church. If any one should be inclined to think that enthusiasm for the older time colors with an aureole of partiality the scanty traditions of mediæval monastic accomplishment, there is the story of much more recent work in our own country to confirm his expressions.

"What I have said of the monks of Europe," he said, "is equally true of the missions in this

country. There was the same evolution and at their dissolution the same fate. When Father Junipero Serra and his followers came as Franciscan missionaries and established the chain of missions at San Diego, Los Angeles, San Gabriel, Monterey, Santa Clara, San Buenaventura, San Juan Capistrano, and San Francisco (Dolores), and San Luis Obispo, between 1767 and 1783, they estimated that there were over eighty thousand Indians in Alta California. At the Mission of San Gabriel there were about seven thousand. The priests wrote that they had never found anywhere such tractable and energetic savages as those in California.

" After a few years the missionaries were never afraid to trust their lives and property among the Indians. The fathers taught the Indians at the several missions to sow wheat, grind corn, till the soil, to raise herds of cattle, to dress hides, and to make their clothing. The priests brought grapevines, olives, fruits, and nuts from their old homes in Spain and Castile, and taught the Indians how to cultivate them in California soil. In time the missionaries had induced all the Indian families to come and dwell in *pueblo* communities about the missions, where the Spanish *padres* were monitors, socially, industrially and religiously. When the missions were legally disestablished by order of the Mexican Government, and the lands were partitioned to Mexican families, the herds and flocks sold, and the mission-

aries told to seek other walks of life, the Indian *pueblos* soon went to ruin. The Indians themselves wandered aimlessly away, settling in one place until driven to another by the white man. No one attempted to preserve their moral condition, and to the natural savage inclination for licentiousness was added the bad example of the low whites of the frontier of those days."

But agriculture was not the only great occupation of man that benefited from the labor and the organization of the monks. Modern generations are very apt to think that great industrial combinations and co-operation for purposes of trade are quite recent inventions, or that at least the Church, with its interest in other-worldliness, could claim no credit for developments in any such worldly matters. It must not be forgotten, however, that a definite effort was made by a great many unselfish men of the monastic orders to make life more comfortable for those who had come to live around the monasteries and who were dependent on them. This effort even went to the extent of arranging matters of commerce, even in an international way, and bringing co-operation between the great monasteries of different parts of the country and different countries for the benefit of their tenantry. Mr. Ralph Adams Cram has, in his book on "The Ruined Abbeys of Great Britain," paid a high compliment to the religious orders of the Middle Ages in this respect. He describes, for instance, the remains

that may still be seen at Beaulieu, which indicate very clearly how much the monastery did in the organization of industry and of commerce for its tenantry, though Beaulieu was not one of the most important monasteries and was far from being even the most populous or the most wealthy. What is to be found here only shows what must have existed on a larger scale in many places, though unfortunately destruction has proceeded to such an extent that there are not even remains to hint of their existence. Mr. Cram says:

"Some idea of the power of one of these great monasteries may be gained from traces still existing of the centre of trade built up by the monks outside their gates. Here, at the head of tide-water, in a most out-of-the-way spot a great stone quay was constructed to which came ships from foreign lands. Nearby was a great market-place, now as then called Cheapside, though commerce exists there no longer. At the height of monastic glory the religious houses were actually the chief centres of industry and civilization, and around them grew up the eager villages, many of which now exist, even though their impulse and original inspiration have long since departed. Of course, the possessions of the abbey reached far away from the walls in every direction, including many farms even at a great distance, for the abbeys were then the great landowners, and beneficent landlords they were as

well, even in their last days, for we have many records of the cruelty and hardships that came to the tenants the moment the stolen lands came into the hands of laymen."

Probably the most interesting feature of the Church's interest in the benefit of men for this world is to be found in the opportunities provided so abundantly for the poorer classes to rise, through Church avenues, in the Middle Ages. Many of those who think they know something about the history of the Middle Ages talk of the country people as bound to the soil, as literally they were from one standpoint, and the poorer classes as generally having no opportunity to rise above their origin. For those who know their history better, however, there never was a time when such magnificent opportunities for even the poorest to rise were provided as during the Middle Ages. The son of a peasant might become the Lord Chancellor of England, there were literally dozens of them who actually accomplished such a feat. The sons of the poorest might rise to the highest honors in the Church. Churchmen were thoroughly respected, honors were paid to them for their positions, but also for their personalities, and the majority of even the highest Churchmen rose from the lower orders of the peasantry, to be the chosen counsellors of kings and princes and the intimate friends and guides of the highest nobility. What was true in England was just as true all through conti-

nental Europe, and may I add it is just as true to-day. Some of the most influential men of each generation thus rose from the lowest places.

Governor Woodrow Wilson, whose studies in the social conditions of the English peoples fit him to talk with authority in the matter, has expressed himself very emphatically with regard to this feature of the Church and its influence during the Middle Ages. He recognized in it not only a great benefit for the people, but also what seemed to him even more important, a great benefit for the state and for national life. He did not hesitate to say even that:—

"The only reason why the government did not suffer dry rot in the Middle Ages, under the aristocratic system which then prevailed, was that the men who were efficient instruments of government were drawn from the Church—from that great church, that body which we now distinguish from other church bodies as the Roman Catholic Church. The Roman Catholic Church, then, as now, was a great democracy. There was no peasant so humble that he might not become a priest, and no priest so obscure that he might not become Pope of Christendom, and every chancellery in Europe was ruled by those learned, trained, and accomplished men—the priesthood of that great and then dominant church; and so, what kept government alive in the Middle Ages was this constant rise of the sap from the bottom, from the rank and file of the great body of peo-

ple through the open channels of the Roman Catholic priesthood."

Probably nothing better illustrates the thoroughly democratic influence of the Church during the Middle Ages than for instance the constitution of the House of Lords in England at the end of this period. When the political crisis occurred in England a few months ago, in which it looked for a time as though the House of Lords might be shorn of nearly all its power and from which it emerged much lessened in political prestige at least, it became the custom to talk of the English Upper House as a heritage from the Middle Ages. Most people seem to think, and among them were many who considered themselves well informed,—editors, writers for magazines, occasional orators, and the like,—that the English House of Lords as at present constituted was an institution that had descended in its modern form from very old times. Nothing could well be less true than this. Of the nearly six hundred members of the present House of Lords all but about one-tenth owe their seats to inheritance. They are the hereditary peers of England and those selected from the peerages of Ireland and Scotland. There are a few created peers who owe their dignities and seats to the fact that they were able to make enough money to enable them to provide liberally for the political expenses of one or other of the parties and so have their names presented by the Prime Minister whose

campaign they financed, to the Sovereign as worthy of honor. There are besides a few Law Lords and scarcely more than a score of Lords Spiritual.

In the old times, before the Reformation so-called, however, more than half of the membership of the House of Lords consisted of the Lords Spiritual. They were not alone the bishops of England, but the abbots and masters and heads of religious houses generally. The majority of the Lords Spiritual represented the great religious houses. These men as a rule were not of noble birth, very often they came from the ranks of the lowly, and they had been chosen by their brethren to important official position because they had manifested administrative ability of high order, and exhibited the qualities of thoughtfulness for others that picked them out as worthy and especially fitted to be superiors. These men knew the difficulties of their people, they knew how much taxes weighed down on them in time of war, they knew when crops had failed and when there were special difficulties for the masses. Above all they had themselves worked beside the people and were in thorough sympathy with them. Better representatives of all classes it would be hard to find. Without families themselves there was little temptation to benefit themselves at the expense of others, while their religious training had all been directed to making them thoughtful of

others and careless of that personal success which so often distorts the view of the politician and disturbs his devotion to duty.

These men as a rule were well educated, they were accustomed to dealing with their tenantry and knew all their problems, they were thoroughly interested in the development of the country, and while they appreciated peace they could see the necessity for war on occasion and were ready to assume their share of burdens for maintaining national honor. The House of Lords thus constituted was a very different body from the almost entirely hereditary chamber that we know at the present time. To talk of the present House of Lords as a mediæval inheritance, an incubus weighing down upon the English people because of mediæval feudalism and religion, is to ignore utterly the real state of the case. It was after the confiscation of the great religious houses and the creation of new peerages whose houses were enriched by grants of the lands of the monasteries, while at the same time the prestige and the number of the bishops was reduced, that the present composition of the House of Lords came into being. There is no more precious institution thoroughly deserving of deep study than the mediæval House of Lords with its large democratic elements. It has not yet been studied as it deserves to be, though men are coming to recognize its real place more and more, and Mr. Woodrow Wilson's remark shows that the mod-

ern historian is coming to appreciate what an eminently democratic factor the Church was in the older days.

What was thus important in politics was if possible even more important in the social order. People of our time are prone to think that the solutions of the social problems which are gradually being evolved in our day, and which include profit-sharing, old age pensions, accident insurance for workmen, and help for workmen's families, when illness or accident deprives them of their supporter, are modern. It is true that, as we knew them, these great new movements in social life have only developed in comparatively recent years. It is scarcely a score of years since the first of the European nations took up the solution of the problem of old age pensions. Many of them are only discussing it distantly as yet and we ourselves have not come around to it. The same is true of insurance for the workmen and help for the working men's families. It should be recalled, however, that these problems were taken up very seriously by the guilds of the Middle Ages, which were essentially Church societies, and solved beautifully. In our time we saw the large insurance companies exploit the workman, who, in his solicitude for his family, is prone to try to carry more insurance than his wages will justify and who forgets the vicissitudes of his trade and the fact that about once in four years most workmen have a winter when they

can get very little work and when even a small sum every week seems so large that it is quite impossible to spare it, and the policy lapses and the workman loses his little hardly-earned economies. Instead of this, the guilds helped the workmen each in its own district and the general results were ever so much more satisfactory and less liable to abuses.

Instead of huge accumulations of capital, not a little of it due to lapsed policies, accumulations which show how easy it is for the wealthy and the educated to exploit the poor and the thoughtless, the treasuries of the guilds were able to fulfil the workmen's obligations for each other without any of the dangers of corruption for political purposes, without providing the temptations to dishonesty that large amounts of capital always carry with them, and without creating an expensive machinery that absorbs so much of the money paid in for insurance purposes. Just in the same way the charity of that olden time, thoroughly organized because the guilds of each neighborhood were in communication with each other, was but little liable to abuse on the part of those benefited, did not tend to pauperize them, and did not consume in administration expenses most of what was paid in for charity. The working of that beautiful institution, the St. Vincent de Paul conferences, in our time shows how this form of organization of charity can succeed. There were no poorhouses,—those abominations

of desolation, of so little help and of so much confusion,—because, in their real charity, they needed no poorhouses. It almost came to be a proverb that orphans had a better chance to succeed in life, because they were the children of the whole guild, than if both their parents had lived to care for them.

Above all they were careful during these mediæval times when Church influence was so strong not to break up families. So long as a mother was alive and was willing to care for her children they were not taken from her and charitable provision was made so that she might be able to hold them together. We have only come to realize within the last few years that our present-day policy in that matter is often a serious mistake and at best a makeshift. When widows find themselves unable to support their children, we take the little ones away, put them in orphan asylums, and we used to think that we were doing charity. Since the establishment of Children's and Domestic Relations courts we have come to realize that this mode of dealing with a difficult subject is more costly in money and infinitely more expensive in moral influence than the maintenance of the family. If the amount of money that has to be paid for the support of children in institutions were given to the mothers they would often be able to keep the family together to exert all the precious influence that affection in the midst of trials borne for others

has in the training of character and the education of the will. In some states we are coming to carry out this idea. Let us not forget that in doing so we are only going back to the old mediæval solution of an extremely difficult problem which, under Church influence, our forbears worked out very well.

While preparing for happiness, hereafter, the Church is often said to distract attention from the happiness of man here and now. Above all the Church is supposed to take away from man his love of success in this world and consequently to decrease his power of accomplishment. It has even been suggested that the reason why the Protestant nations are, as a rule, more prosperous than Catholic nations is exactly because the whole tendency of the Church is to wean people from over-sedulous interest in material things, so as to get them to devote more attention to the spiritual side of life.

It is not easy to say in a few words how utterly false to the realities of history is any such thought, or to tell in brief how the great Catholic nations had their time of prosperity just when they were most intensely Catholic and how the commerce and the initiative and the exploring genius of Spain and Portugal, when they were literally Catholic countries, opened up the world to the enterprise of men. Even in a few words, however, much might be said of what the Portuguese did for India in the days before England's throttling

hand came down on it and how much Spain did for this Western Continent. In the development of their dominion here in America the Spaniards made handsome, beautiful cities to live in when we in English America had only the most sordid, narrow and inartistic surroundings. There were beautiful municipal buildings, handsome university structures, magnificent cathedrals in Spanish America, when in English America there was nothing of public art at all. Humboldt has told the story of that very strikingly, and while he has almost nothing to say of the English America of his time, he is loud in his praise of what had been done in Spanish America.

Bourne, of Yale, has written a very striking chapter of the history of the Spanish American universities, of their fine buildings, their large numbers of students, their thoughtful and full curriculums and of how much they accomplished. When Harvard had less than 100 students, the University of Mexico had over 1,000 and the University of Lima, in Peru, even larger numbers. Bourne does not hesitate to declare that in the seventeenth century "it is not too much to say that in number, range of studies, and standards of attainments by the officers, these Spanish American Universities surpassed anything existing in English America until the nineteenth century." They did magnificent work in the languages, but they did not neglect and made distinct achievements in many branches of science,

some of which, as the anthropology and ethnology of the Indians, we have only come to take up the serious study of in the latter half of the nineteeth century. The revolutions which separated these countries from the mother country and made them liable to all the disturbances that come in mixed races so largely of native blood hampered their development in the nineteenth century, but at the beginning of that they were far ahead of us.

Above all it must be realized that the Church's work has always made for contentment and happiness among mankind in this world, and that the more intensely Catholic a people the more of happiness there was. Catholic England was Merrie England and Catholic France was gay France and the *Heiterkeit* of the Germans was most manifest in Catholic times. Protestant nations may point to greater material prosperity, but often at awful cost. Wherever Protestant England has gone as a colonizer, the native populations have disappeared before their strenuous activity for worldly success. In Australia none are left, they are a diminishing few here in America, the teeming millions of India have not been eradicated, but there is no doubt that a great civilization of a different kind to ours has been impaired by a successfully commercial invasion. Where the Catholic Spaniards went the natives still exist in greater numbers than when the Spaniards landed. President Taft's compli-

ments on what the Spaniards succeeded in accomplishing in the Philippines, where he declared that, as the only example in history, a civilized nation had lifted up barbarians to a plane where they were almost ready for self-government, shows what may be accomplished by a genuine Christian spirit in spite of handicaps of the most serious character.

In a word there was not a phase of real progress of humanity in which the Church was not alone deeply interested, but was the most important factor. While constantly insisting that life here was only passing and meant as a preparation for another, she quite as constantly maintained and insistently taught that happiness here, in the best sense of the word, was conducive to such moral living as gave the best assurance of a happy hereafter. Far from occupying men's thoughts exclusively with another world the development of all that is best and really significant in this was considered an inviolable duty, and the greatest happiness of the greatest number was carefully fostered. While the rich were warned that they possessed only a stewardship of wealth to be used for great purposes, the poor were made to feel that the highest joy of living might be theirs in the enjoyment of beautiful art and architecture, fine music, charming arts and crafts work and all that uplifts the human spirit. Church holy days were frequent, but they were holidays from toil on which provision for joyous

happy amusement was made. The people were made happy as far as that is possible, the brotherhood of man became the source of unnumbered blessings for the race, and civilization and culture, not for the chosen few alone, but for the great body of the people, became the aim of a society which owed all its best impulses to the Church.

There are a great many people who would, at least, be quite sure that it is only the nations who have been most interested in this world, in the joy of living here below, in happiness now without thought of the hereafter, that have left supreme monuments of their existence in the world. They would cite the example of Greece, for instance, with its infatuation with the joy of life and its consequent high sense of art as an expression of life, its utter this-worldliness and the consequent desire to surround itself with great monuments, as illustrating the only attitude towards life that can be surely productive of supreme human achievement. Greece's artistic monuments have been the admiration, and to some extent, the despair of the modern time, but it must not be forgotten that even for these it was the religious spirit dimly struggling through veils of sense that was the highest incentive and the source of artistic inspiration. Even when Rome, imitating Greece and copying her achievements, made enduring monuments, the same spirit, dimmed though it was, was at work. The Par-

thenon, the great statue of Jove, the Erechtheum at Athens, the Pantheon at Rome, are typical examples. The religious spirit meant much more than anything else in them, though this is sometimes lost sight of and the true font of inspiration missed.

It must not be thought, however, that these surpass what was accomplished by peoples whose motive, under the guiding eye of the Church, was other-worldliness and whose thoughts in art were all guided by religion. With confidence one may set the marvellous Gothic cathedrals beside the greatest architectural structures of Greece and Rome and know that, far from standing below them, in many respects they excelled them and are, perhaps, the most wondrous expression of human thought in architectural form that man ever accomplished. In mere size, they surpass anything that the Greeks did, but their size is only emphasized by their beauty. It might be expected that, at least in sculpture, the Greeks, with their delight in the human form, would surpass any subsequent efforts in this line, but the Gothic sculpture of the thirteenth century, animated as it is by the Divine in man, has given us some examples of the human form divine that compare even with the Greeks at their best. As for the monuments of Rome, one comparison will suffice to let us see how far the Church surpassed even Imperial Rome in the wish and the successful effort to raise a great monument

worthy of the world-wide institution that it was meant to represent.

When Michel Angelo was asked to finish St. Peter's, a great Pope reminded him that the Papacy wanted to erect in Rome a monument greater than any that Imperial Rome had left behind. As the Church embraced more of humanity and was wider in its influence even than Imperial Rome had been, so should this monument surpass anything the Romans had done. And the great spirit of the Florentine architect rose to the occasion. He went round Rome to study the monuments that the Roman Empire had left. Then he came back to tell the Pope that there were two supremely great monuments of Imperial Rome, so admired of men that they had been classed among the wonders of the world, the Colosseum, larger than any ornate structure that had ever come from the hands of man up to this time, and the Pantheon, the largest enclosed space without a pillar, the loftiest vault that man had ever dared to spring. And then he declared, that as the monument of the Christian Church, worthy of her greatness in every way, he would set the Pantheon on top of the Colosseum. That is what St. Peter's is. Angelo lengthened the Greek cross of Bramante's original ground plan, into the present great Latin cross, until it was larger than the Colosseum, and then, above its lofty pillars at the crossing, he raised the huge dome, larger in diameter even

than the Pantheon, though set over 100 feet high in the air above the great church. Close to it one does not realize all the mighty work that it is. But seen from twenty miles out at Tivoli, or as the traveller used to see it, while approaching Rome, in the stage-coach of the old days, just as he crossed the mountain, all its stupendous majesty is appreciated. When no trace of Rome itself can as yet be seen, high up above the horizon stands this mighty structure, a tribute to the power of man and man's mind to lift itself gloriously into the very heavens in the accomplishment of his lofty purposes. We are prone to be proud, at least, of the immensity of our constructions in the modern time, yet in mere size, Michel Angelo's great dome yields to none, even of the largest structures of to-day, as a magnificent triumph of architectural genius.

And the spirit that animated Michel Angelo was not alone the spirit of art, strong though that was within him, but a deep fervor of piety lending itself to the inspiration of a great work. Read his sonnet to his crucifix, in which he begs pardon of his crucified God for ever having taken any pride in his own work and asks that he shall always remember that his gifts are from on high, to be used only for the glory of their Giver, and the source of his inspiration is surely revealed.

But for the power of the Church and her interest in beautiful things for this world, as well

as for the hereafter, St. Peter's and the thousands of other works of that glorious Renaissance time could never have been accomplished facts. Interested in other-worldliness she was, but not to the neglect of this world, and more than any other single agent, she tempted men to bring out what was best in them, not alone as a monument of their genius, but for the service of their Creator and for the satisfaction of the sense of beauty of their fellow men.

Only that the Church has always been interested in art of all kinds,—in painting, in sculpture, in architecture, in literature, in education,—the highest of the plastic arts, we would have missed many of the finest developments of human power. Not only did she furnish sublime themes to the artists' soul, but, in a material way, she contributed to their support while planning beautiful things, saw that they were properly rewarded, gave them the opportunity to employ their gifts, and provided them with such means of livelihood as enabled them to go on peacefully with their chosen work. It is easy to say that it is inevitable that the great artists should be recognized and should find patronage. Let us not forget, however, that in our nineteenth century we almost let our greatest artist, Millet, starve. Some of his canvases, that have since sold for hundreds of thousands of dollars, passed originally out of his hands for a few paltry tens of dollars, and during many years of his life his family were in destitu-

tion. Only that Madame Millet was satisfied to suffer, in order that her husband might have the chance to do the things he wanted to do, Millet would surely have turned to the painting of conventional pot-boilers, for which, over and over again, the art stores offered him much better compensation, but he wanted to do his peasants and he did them in spite of the neglect of a world interested only in its own sordid worldliness, and he left behind him the greatest social as well as artistic monument the nineteenth century saw. It was no thanks to his generation, however, for, far from encouraging him, they discouraged him in every way.

All during Christianity, artistic souls have found a patron in the Church. Many of them have found a refuge in the cloister, where they could follow their art without any thought of the strenuous life around them, or of the necessities of to-morrow and where they could get the leisure and the inspiration for beautiful work without disturbance and without interruption. If the Church had shown her power to make this world happy in no other way than by her encouragement of art, and literature, and music, if she had done nothing more than preserve the products of artistic genius in all these lines, as well as furnish the incentive to them, it would be idle to talk of her as so interested in other-worldliness, that the place of this world was neglected, much less relegated to an inferior

position. Nothing so enables men to get what is best out of this life as the thought, so insistently emphasized and repeated by the Church, that this is only a preparation for another life. Nothing so lifts man above himself into the highest possible expression of all that is beautiful in his soul as the thought that he is not of the earth earthy, but that he is made for higher things and that somehow the spirit in him that aspires after higher things can, by religious feeling, find a suitable and supremely satisfying expression of itself through its material veils as a foretaste of the freedom of the spirit world that is to come.

If we take the forms of expression, achievement in which was considered to mark great human advance, architecture, poetry, painting, sculpture, music, education, and the exercise of such charity as makes the greatest happiness possible for the greatest number, we shall find that the Church has been the most important factor in human production in them all during her history. All architecture from Christian Roman through Byzantine and Romanesque and Gothic and the Renaissance architecture, was developed under her patronage. The only ideas that the New World has contributed to architecture are to be found in the Spanish American style which we owe to the old Spanish Franciscans. In poetry Caedmon begins a long line of poets who drew their inspiration from Christian teaching. The great Latin Hymns, the Arthur Legends, and Dante represent mag-

nificent Christian contributions to poetry in the Middle Ages, and some of the greatest poetic inspiration at all times has come through the Church. The drama was reinvented and that pageantry which now once more is attracting popular attention was finely worked out. Modern music was all developed under her patronage. The Gregorian chant, sublime in its simple effectiveness as a mode of musical expression, is her special instrument, part singing was invented for Church ceremonials, the Mass was the inspiration for the oratorio and that, in turn, for opera, and most of the great musicians have been glad to lay the tribute of their genius at the foot of the altar.

The arts and crafts owe all their wondrous mediæval perfection to Church patronage. Sculpture developed under the same auspices and almost in the same way. In education the development of the universities, but also of the lower schools of Europe, can be traced to ecclesiastical and monastic interest in the diffusion of information. In England the grammar schools existed everywhere and the story of the grammar school at Stratford, founded and supported by the Guild of the Holy Cross, gives one an excellent idea of the popular education before Henry VIII confiscated these foundations. As for charity, the foundation and magnificent development of hospitals and of many institutions for the care of the ailing poor show one phase of it, while

the guilds, which enabled men to help each other without pauperization, represent another. Between these two, most of the social problems that are a source of so much trouble to us at the present time were solved in ways that deserve to be studied by those who are seriously interested in making life happier for the great majority of people at the present time. Everywhere, and at all times, the spirit of Christianity is fecund with benefits that bring out the best that is in man's spirit and lift him above himself.

THE STORY OF POST-GRADUATE WORK

"When we have thoroughly mastered contemporary science it is time to turn to past science; nothing fortifies the judgment more than this comparative study; impartiality of mind is developed thereby, the uncertainties of any system become manifest. The authority of facts is there confirmed, and we discover in the whole picture a philosophic teaching which is in itself a lesson; in other words we learn to know, to understand, and to judge." —LITTRÉ: *Œuvres d'Hippocrate*, T. I., p. 477.

"The art of all arts, the science of all sciences, appears to me to be the art and science of directing men, the most varied of beings, and the most changeable. Some have need to be nourished with milk—the most simple and elementary lessons; but others require the wisdom which is spoken among them that are perfect—a stronger and more solid nourishment."—S. GREGORY.

THE STORY OF POST-GRADUATE WORK *

I CAN assure you, quite frankly, that it was, indeed, a great pleasure for me to be able to reply affirmatively to the request of your president to come to make an address at the dedication of your science hall at St. Francis Xavier's University. Of course, it is a long way from Broadway to Antigonish, and I confess that I had to take down my atlas in order to be quite sure just where Antigonish was, but that, I hasten to assure you, was not because I had not heard of Antigonish before. For who of us have not heard of it, and the musical sound of the name, once heard, can never be forgotten, and all of us know of the great big descendants of the Scotch Highlanders, who live up—or is it down—East, here, in the northern end of Nova Scotia, and most of us have met some of them, and the more we know of them the better have we liked them. All of these considerations added to the readiness with which I responded favorably to your President's kind invitation, in spite of the necessity for the atlas—for transportation purposes only. But

* An address delivered at the dedication of the MacNeil Science Hall, University of St. Francis Xavier's College, Antigonish, Nova Scotia, August 24, 1911.

now that I have been here among you, I know better than ever, that it was just the right sort of feeling that prompted me to come, and though we New Yorkers are said to be rather complacent about ourselves and our city, and one distinguished denizen of our metropolitan canyons is said to have declared that he would rather be a lamp post on Broadway than the mayor of Omaha, some of us might well think that he would rather be prominent and peaceful and happy away up here in Nova Scotia than lost in the whirl of the strenuous life in our big city. I fear that "hooked-nose fellow of Rome" said something like that before me, but I have long since given over trying to be original. "What's the use!" as we say in the States, our forbears had the chance to get to things, and nearly a millennium and a half ago St. Jerome quotes an old grammarian, Donatus, I think, as saying, "cursed be those who said our good things before us."

I have wondered, not a little, just what would be an appropriate subject for a New Yorker to talk on, on an occasion of this kind, but since we are dedicating a science hall to-day, I have thought that probably nothing that I could say would have more of interest or significance than the story of post-graduate, or is it graduate science that you call it? as it has developed in the universities during these seven centuries since their foundation made the mould in which the

mind of humanity has been formed down to our own time.

This is the phase of education in which our generation is most interested or, at least, which our universities make the most of, spend most money on, and for which endowments are most eagerly sought and obtained. We are sometimes inclined to think that this is the first time in history that the world has taken up seriously the important problems of scientific investigation in this way. When we consult the general catalogue of one of our larger universities at this time and note the extensive number of courses that are given involving special research in science, it is for most of us an index that a great new development in human intellectual interests has come, bringing us to the definite knowledge that physical science can obtain for us, and that the evolution of mankind is clearly making itself felt in our educational systems. We have been so much occupied with the thought of evolution during the nineteenth century that we find traces of development everywhere and one would almost perforce be compelled to think that progress could be measured from decade to decade and that the advance of the human race was easy to see from generation to generation. Physical science is supposed to be the characteristic interest of the most advanced of generations, this of ours, the latest in the files of time and, therefore, *of course,* ahead of all the others.

Unfortunately, perhaps, I am not one of those who, in our American phrase, take very much stock in the supposed progress of mankind. I may, indeed, say, to continue the metaphor, that I disposed of all my shares in this prospect some time ago, confident that the promoters had so grossly exaggerated its value, or so literally manufactured its assets, that it was a dangerous concern to be any longer a stockholder in. There is, of course, no progress in art, no progress in architecture, no progress in literature,—epic, dramatic, poetic, historic or of any other nature,—no progress in philosophy, no progress in ethics, so far as human knowledge is concerned. As has been said, the mists that hang around man's origin and destiny are just as deep now, so far as human knowledge goes, as they ever were. There has been abundant pretence of knowledge that has been belied by the course of time. Our own Josh Billings, whom you Canadians are said to have appreciated even more than ourselves, once said, "It is not so much the ignorance of mankind that makes them ridiculous as the knowing so many things that ain't so." After all, he was only paraphrasing, in humorously American vein, what Roger Bacon said nearly seven centuries before, when he declared that, what keeps men, more than anything else, from making advance in knowledge, is their fear to say I do not know.

Any one who thinks, however, that there is

little to be said about advanced work in science in the past must be quite unfamiliar, not alone with the great books of the older time, that were published at the time of the Renaissance, but also the histories of various phases of science that have been written in our own day. Cantor's great "History of Mathematics," Gurlt's "History of Surgery," Puschmann's "History of Medicine," are but typical examples of magnificent scholarly works, large portions of which are devoted to the history of scientific development during times when, according to popular impression, there was little attention paid to science. The reason why these writers devoted themselves for so many years to the task of finding out what was done in the past is, that the more they learned about it, the more they came to realize how much that we are likely to think of as distinctly modern was anticipated in very old times.

As far as regards opportunities for graduate work, the story of the old mediæval universities is particularly interesting. After giving young men, and in Italy, at least, even young women, thorough training in what we would now call the undergraduate studies, the departments of philosophy, theology, law and medicine were open to them. As for their undergraduate training and its value and significance, we have a very striking piece of evidence from a most unexpected quarter. In Huxley's inaugural address as the rector of Aberdeen University, an address

which very properly finds its place in his collection of essays, "Science and Education,"* he gives his appreciation of mediæval university studies. Aberdeen was founded during the fourteenth century. When Huxley was elected rector and the question of preparing his address came up, his thoughts went back to the early days of the university. One might suspect, but perhaps it would be ungenerous to do so, that he went back to study the details of its curriculum in order to be able to illustrate, by a horrible example, what should not constitute the course of studies at a university. Huxley was a man, however, to whom facts appealed above all, and once his investigating spirit was aroused he had, as many an opponent in discussion learned to his cost, a rather startling way of getting at ultimate facts and then expressing them forcibly.

Accordingly, strange as it may seem to modern readers and those unfamiliar with recent developments in the history of education, though it should be no surprise to those who are familiar with the story of medical education, Professor Huxley found much to praise and even did not hesitate to make a comparison between the curriculum of the early universities and our own, which is not at all favorable to our time. He said:

"The scholars seem to have studied Grammar,

* Appleton, 1896.

Logic, and Rhetoric; Arithmetic and Geometry; Theology and Music. Thus, their work, however imperfect and faulty, judged by modern lights, it may have been, brought them face to face with all the leading aspects of the many-sided mind of man. For these studies did really contain, at any rate in embryo—sometimes, it may be, in caricature—what we now call Philosophy, Mathematical and Physical Science, and Art. *And I doubt if the curriculum of any modern university shows so clear and generous a comprehension of what is meant by culture, as this old Trivium and Quadrivium does.*" (Italics ours.)

Surely that ought to be ample authority for the scientists of our generation, at least, that they knew how to train undergraduates, to give genuine education in the old universities, and astonishing though it may seem, that they knew how to teach them science and to train their minds scientifically.

Now as to the graduate work of the universities. As regards philosophy little need be said. It is to the professors and the students of these universities that we owe text-books of philosophy that have had more and more far-reaching influence than any text-books ever written, with the exception possibly of those of Plato and Aristotle, on which, and especially the latter, the mediæval philosophers' writings were founded. I need only mention such names of mediæval university teachers of philosophy as Aquinas, Albertus

Magnus, Duns Scotus, Alexander of Hales, Raymond Lully, to make this very clear.

In law the greatest development of jurisprudence in modern times came during the century—the thirteenth—when the universities reached their highest developments. Practically every country in Europe rejoices in basic laws obtained through the influence of the founders and promoters of these universities, Magna Charta in England, the Forum Judicum in Spain, St. Louis's fundamental laws of France, the Golden Charter of Hungary. And it is to this century that we owe the great compilation of laws that have meant so much in both canon and civil law for all after students in this subject. Bracton's Digest in England, the great collections made by the Popes and the basic documents of French and German law come from this time.

Many educated people in the modern time, however, are apt to think that while these educators of the olden time may have occupied themselves with great success and fine purpose with the ethical sciences, at least we are far ahead of them in our estimation and treatment of the physical sciences. We have specialized in physical science in our day and are very proud of the results. Most of us are quite sure that never before has anything like the same attention been given to the physical sciences. Above all, while much time and energy were devoted to other educational departments, that of the physical

sciences is usually supposed to have been scarcely taken seriously. It is rather interesting, in the light of this impression, which is so prevalent now, to study some phases of the scientific work, in our sense of the word scientific, that is, limited to the physical sciences, as they are exemplified in the mediæval universities.

Let us take medicine, for instance. We are particularly prone to be proud of the development of medicine and surgery in our time, and of the raising of the standards of our medical education. By a law of the Emperor Frederick II, promulgated about the middle of the thirteenth century, it was required that prospective medical students should first spend three years in preliminary studies, that is, do the undergraduate work of the university and then spend four years in the special studies of the medical sciences. Even after this, while the doctorate in medicine was awarded after passing a successful examination and this gave permission to teach in inferior positions in the university, the doctors were not allowed to practise medicine until after they had spent a year in practice with a physician of some years' standing.

This is the standard to which we are trying to lift up our medicine and medical education in America at the present moment. We are increasing the required preliminary work. We have not yet reached the state, however, where we dare make it the rule that men shall have

their undergraduate degree—if that is not a contradiction in terms—before they are allowed to study medicine. Some half a dozen medical schools have done so, but we are not prepared for it as yet. After their four years in medicine—I am glad to know that you here in Canada require five—we would like to have every graduate take a year in a hospital, the equivalent of that mediæval year of practice with an older physician, and while many of our graduates do so, there is no need to tell an audience of this kind that most of them do not. They are too anxious to get to money-making for themselves.

With Huxley praising undergraduate scientific study and this high legal standard for medical education in the thirteenth century, a proper estimation of the place of these mediæval universities in the history of scientific education can be obtained. They have, of course, been utterly misunderstood. The reason for that misunderstanding is interesting. Our history of education has, in English-speaking countries especially, been written almost entirely from the standpoint of religious controversy, and nothing good could be admitted to come out of the Nazareth of the times before the Reformation so-called. Scientists have sometimes permitted their estimation of the history of even their own sciences to be warped by controversial writings, which often ignored completely the true story of science in order to make points against opponents.

Ordinarily, it is assumed that, so long as the Christian Church was able to influence the course of education, very little attention was paid to science in those countries in which the Church was paramount in her influence. Science is supposed not to have developed; it is only presumably with the throwing off of the shackles of religious intolerance that the possibility for science to develop came. In the light of this impression, which prevails so widely with regard to the influence of the Church in suppressing scientific education to as great an extent as possible, it is interesting to trace the story of post-graduate study in science during the last seven or eight centuries.

We have had our attention so narrowly fixed on ourselves in recent years as to forget that there is a history of science and of scientific education for full seven centuries. During the first half of the nineteenth century France became the *Mecca* of students who wanted to get opportunities for graduate work in science and to get in touch with great original scientific investigators. There were a series of men teaching at Paris, whose achievements naturally attracted students from all over the world. Ampère was revolutionizing the physical sciences and especially electricity. Lamarck had just written his book on the theory of evolution and had brought the study of the invertebrates into a scientific category. Laennec, the father of modern clinical

medicine, was teaching the world how to make medical observations. Buffon, Cuvier and others were establishing biological sciences on new lines. Biot and J. B. Dumas were laying new foundations in the physical sciences. Louis, to whom we in the United States are particularly indebted for the training of our first prominent physicians, was doing fine teaching in clinical observations. No wonder students from all over flocked to Paris to obtain the opportunities that might be secured under such masters, and no wonder, also, after their return, their influence sent others to the French capital.

Shortly after the middle of the nineteenth century, however, the influence of the great pupils of Johann Müller began to make itself felt and it was not long before they turned the tide of student travel towards Germany. Virchow, who founded cellular pathology; Theodor Schwann, who had made the discovery that all animal tissues were composed of cells, thus laying the foundation of modern biology; Helmholtz, whose contributions to physics were to mean more than those of any other man of the nineteenth century; Du Bois-Reymond, Brücke, Reichert and many others, who made fine original researches in physiology; Liebig, who revolutionized chemistry, and then the great teachers, His, Hyrtl, Billroth, Kölliker and many others, turned the eyes of the students of many countries besides their own towards Teutonic teachers. While France was

the special home of graduate study, for the first half of the nineteenth century, Germany came to occupy that position during the second half. We are confidently hoping that America will have its opportunity for a place among the teachers of the world in the next few generations.

With this story of graduate science in the nineteenth century we are all familiar. How many are there who have asked themselves the question, where did enthusiastic students, who wanted to get original work in science, go before that time? We may say, at once, that Italy for seven centuries was the recognized home of post-graduate work. There are periods when other countries have some scientists who attract attention, there are even generations when Italy has a rival in this regard in some other country, but her primacy was never eclipsed and consistently and constantly the great universities of Italy possessed the professors of distinction, who issued the books, made the discoveries, and offered opportunities that attracted students from all over the world. The story of that older chapter of post-graduate work in science has, so far as I know, never been told as a brief whole, and so it will form a fitting subject to occupy ourselves with this evening.

Just at the close of the eighteenth century Italy had a group of great teachers of science of world renown, whose reputations are still in honor among scientists. Even by their con-

temporaries in other countries the Italian scientists of this time were looked up to as the important leaders in successful original investigation of the highest order. Galvani had made his discovery in electricity after doing excellent work in anatomy, and Volta was opening up that wonderful vista in electrical mechanics, which was to mean so much during the nineteenth century. Morgagni, whom Virchow greeted as the Father of modern pathology at The International Medical Congress in Rome, twenty years ago, was revolutionizing pathology, laying the foundations of our present knowledge in this department. The Abbé Spallanzani was working an equally great or even greater revolution in biological science. Father Beccaria was doing work in electricity, which, when he was scarcely fifty, brought about his election as a fellow of The Royal Society of England.

Other great Italian investigators and teachers in science of the second half of the eighteenth century might be named, but surely this is enough to show how progressive were the scientists in the peninsula and how strong was the call to scholars from every part of Europe to go down there for special facilities in any and every branch of graduate scientific work—physical and biologic. In the first half of the same century such men as Lancisi, Laura Bassi—for surely she deserves to be classed with the men—Morgagni, who was then in his prime, doing great original work,

Valsalva and others were attracting world-wide attention in Italy. Vallisneri was doing the work in the biological sciences that was to form a basis for Spallanzani's great development in the next half century and no form of science was neglected. It is true that Boerhaave, Hoffman, Stahl and Haller were attracting attention in the Teutonic countries, but Italy was the educational magnet for most of the ambitious students of science whose idea was original investigation during this period.

During the seventeenth century this was even more true. Malpighi's great work alone would have proved a centre of attraction, but he was but one among many. Malpighi has his name attached, and deservedly, to more structures in the human body than any other of our investigators, because of his original discoveries. There are Malpighian bodies in the spleen and the kidneys and the Malpighian network in the skin. He had a genius for original work, however. While at Messina, walking one day in the garden of a friend, he snapped the branch of a chestnut tree, which overhung and obstructed his path, and his attention was arrested by the vascular bundles projecting and hanging down from the broken end of the branch. This led him to study plants and to write what Professor Foster, in his "Lectures on Physiology," in this country ten years ago, declared to be "an immortal book on the Anatomy of Plants." He was the founder

of plant morphology. He may also be considered the founder of that important branch of biological science that we know as embryology. He was a great zoölogist and a comparative anatomist, but nothing in science came amiss to him. He became interested in the silk-worm, examined not only its outward form but also its internal structure, and described the minutiæ of its viscera, leaving his name on the Malpighian tubules in the creature, tracing out its whole history from the egg to the perfect insect.

Professor Foster greets him as the man who, first of all others, laid firm hold of the fundamental principle of the essential identity of vegetable and animal life. Such ideas are usually supposed to be much more recent in origin, but the more one knows about the writings of these older men the more clear does it become that they anticipated many of the thoughts we look upon as modern. It is men of this kind that inspire pupils to original research, and to whom disciples come from all over the world. In the next century such another man was Spallanzani, whom I have already mentioned, constantly experimenting, observing, questioning and trying to secure the help of all the sciences in getting the answers to his questions to nature. Spallanzani, for instance, swallowed sponges attached to strings and then collected the stomach secretion in order to study it. Some of the accounts of his experiments read like modern laboratory

work and it is not surprising to find that students should have been attracted from all parts to him. In studying digestion, he experimented with all kinds of animals, fishes, frogs, serpents, birds, sheep, oxen, horses, cats, dogs and lastly himself. He ran no risk of going astray by making deductions based on results gained from one kind of animal alone. This is the sort of work that we think was reserved for the last hundred years to initiate, but that is only because we have not known what they were doing before.

At the beginning of the seventeenth century Harvey, whose investigations did so much to make the circulation of the blood clear, was studying at Padua under Fabricius da Aquapendente. Harvey's gratitude toward his Italian teachers is well known, and any one who is familiar with the busy scientific investigations in Italy at the end of the sixteenth century, will understand why Harvey eagerly grasped the opportunity to make his studies down there and how easy it was for him to secure valuable teaching and impelling inspiration. Besides Harvey's teacher, Fabricius, two other names deserve to be mentioned among the great biologists of Italy during this century. They are Borelli and Baglivi. Baglivi died at less than forty and yet had achieved fame by his work in the biological sciences. Borelli, the professor of natural science at the University of Pisa, wrote on the locomotion of animals and introduced certain mechanical ideas into biology

that were to attract much attention. We are likely to think of this time as lacking in that lively interchange of ideas which prove such an inspiration in science, but once more the usual notion in this matter is entirely without foundation in the realities of the time. There was most active controversy between English, Italians, French and Netherlanders over many scientific problems and scientific discoveries during the seventeenth and eighteenth centuries, and theories spread rapidly.

Greater than any of these scientists, in the range of his investigations, was Steno, not an Italian, but whose fine original work is all associated with Italy. His career is typical evidence for the place of Italy in the scientific work at this time. Steno was a Dane, born at Copenhagen, who, after finishing his studies at the University of Copenhagen, went down to Amsterdam in order to round out his studies in anatomy with Professor Blasius. Anatomy was one of the specialties of Copenhagen, but Steno wished for further opportunities than were there provided. After exhausting the possibilities for original investigation in Amsterdam, he went to Paris, where he demonstrated the parotid duct, which bears his name. Dissatisfied with the opportunities afforded him in Paris he went down to Italy, where he spent many years. His studies in muscles were particularly illuminating and he demonstrated that the heart was a muscle. At that time this

organ was considered to be the seat of the emotions and it seemed almost a sacrilege thus to push it from its pedestal, but Steno's demonstration was complete. He illumined many other branches of anatomy and wrote a text-book in geology, which is considered so important in the history of the science that when the International Congress of Geologists met at Bologna some twenty years ago, they adjourned the last session at Florence, in order to unveil a tablet to the memory of Steno, whom they greeted as the founder of geology.

When Steno went down into Italy he was, as were all the Swedes of his time, a rather strenuous Lutheran. After some years he became a convert to Catholicity, and then a little later, a priest. In the meantime, however, he was, for a time, professor of anatomy at the University of Copenhagen, for his reputation for work done in Italy had readily obtained him this position. Subsequently he became a bishop, so that in the gallery of portraits of professors of anatomy at the University of Copenhagen, it is somewhat of a sensation to find one of them in the robes of a bishop of the Catholic Church. All of Steno's work had been done with the sympathy and encouragement of the Church authorities and under the patronage of high ecclesiastics.

Great as was the work in original investigation in the biological sciences in Italy during the seventeenth century, even greater work was accomplished in the purely physical sciences at this

time. It was during the first half of this century that Galileo did his epoch-making work in astronomy and that Torricelli and others developed what we now call physics. Father Kircher, in charge of the scientific department of the Roman College, the Jesuits' great school at Rome, wrote a series of text-books on electricity, magnetism, light, sound, heat, astronomy, the subterranean world, and made valuable contributions to our knowledge of disease in his monograph on the Pest and on Oriental languages from his studies of the Egyptian monoliths, which were then being transferred to Rome. It would be easy to think that such text-books were commonplace, probably superficial, poorly gotten up and quite unworthy of modern science. Any one who knows the magnificent volumes, however, with their fine illustrations and their magnificent printing, their thoroughness and the completeness with which they handled the given subjects, will be startlingly surprised at how well the book-making side of education was developed at that time. As for Kircher's scholarship it has always been thought of as little short of marvellous, and his scientific inventions and the great museum founded by him show the practical character of his knowledge.

Ordinarily it is assumed that the attitude of the Church towards Galileo shows how science was being suppressed, but only those who know nothing at all of the Galileo case continue to

think so. Huxley wrote to St. George Mivart thirty years ago that he had been looking into the Galileo case and the Pope and the Cardinals had rather the best of it. Bertrand, the Perpetual Secretary of the French Academy, declared that the long life of Galileo, considered as a whole, was "one of the most serene and enviable in the history of science." Only those who are absurdly ignorant of the real state of the case continue to talk of Galileo as having been persecuted. Prosecuted he was legally, for a breach of good faith and the violation of a promise, but he was never in prison. The sentence of the court was the most lenient that could well be imagined and he himself continued to be a devout faithful Catholic.

There were men doing distinguished work in the sciences related to medicine in other portions of Europe, but they were attracting nothing like the attention either from the public or from students that these at the Italian schools attained. Sydenham, in England, did excellent work, but his works have influenced more than his personality. Boyle was attracting attention in chemistry, and Newton to mathematics and astronomy in England, and Van Helmont was securing many disciples for his curious and interesting theories and anticipations of many thoughts of the after-time in Brussels. Silvius was attracting attention to medical chemistry in Holland. Between himself and Boerhaave at the

beginning of the next century, Leyden came to be known very favorably to the students of Europe. Indeed, for a time it might well be said that at this period the Low Countries usurped Italy's prestige in graduate work in medicine, but Italy herself always maintained the magnificent corps of professors and there can be no doubt that the rivalry of the Teutonic university did not materially lessen the large numbers of students who, in accordance with tradition, amply justified by the works of her professors, continued to go down to Italy, because of the magnificent opportunities afforded for the highest education and original research in science in the peninsula. Quite literally it was true that the nearer to Rome the more ardent the intellectual life in every department.

In the sixteenth century no country in Europe held anything like the position, in the eyes of students from all over the civilized world of the time, that Italy did, because of the opportunities there presented for post-graduate work in all departments. This was the century of the culmination of the Italian Renaissance, and that movement is the foster-mother of all our modern education. Even from distant England, ever so much farther from Italy than California is now, many students came. At the beginning of the century Linacre the founder of the Royal College of Physicians of London, was doing the work in medicine and in the humanities down there

which was to give him a European reputation for scholarship. A little later Dr. John Caius, the founder of Caius College, Cambridge, was rooming at Padua with Vesalius, who had come down from the Netherlands for Italian facilities for study in anatomy, after having tried Paris without being satisfied. They were only repeating the experience of their compatriot colleagues of two centuries before, John of Ardern from England and Yperman from Flanders, who, during the fourteenth century, had made their advance studies in medicine and anatomy in Italy.

For there was no place in Europe like Italy to furnish opportunities for study in anatomy during the Middle Ages and the Renaissance period. There are historical writers who insist that dissection was forbidden by Papal decree and the development of anatomy hampered by the over-zealous care of the Church to prevent the violation of the human body, but those who make such absurd declarations know nothing at all of the real history of anatomical science. Hundreds of people were doing dissections in Italy during the sixteenth century. Vesalius' great textbook of anatomy was illustrated by dissections made by him there, Eustachius' magnificent plates were also made from dissections done, not alone in Italy, but, many of them, in Rome itself, while he was Professor of Anatomy at the Papal University. Columbus was teaching at Rome when

he made his anatomical studies, and obtained the material for his important text-book on anatomy. While acting as Papal Physician and Professor of Anatomy at Rome, Columbus made a series of autopsies on Cardinals, Archbishops and other high ecclesiastics of which he has left us the account. So far from there being any prohibition of dissection or ecclesiastical hampering of it, even the artists of the time had ample opportunities to do all the dissections they wished, and some of them have left us magnificent anatomical plates as a consequence. Those of Leonardo da Vinci have been published in recent years, but Michel Angelo, Raphael and many others also performed frequent dissections. Indeed it was rare, at this time, for an artist not to have studied the basic principles of his art by dissection.

But I have mentioned only a few of the names of men who were teaching sciences in Italy in the sixteenth century. Varolius, whose name is familiar to us because of its attachment to the *pons varolii* in the brain, did fine work in brain anatomy, and died as the Professor of Anatomy and Papal Physician at Rome, where he had been summoned because of the distinction of his work. Eustachius did most of his work as a successor of Varolius, and made his great text-book, with the magnificent plates, under the patronage of the Popes. Unfortunately he died before its publication, which was not destined to take place until another great papal physician, Lancisi, gave

it to the world, at the beginning of the eighteenth century. Columbus' great book on anatomy was dedicated, with permission, to the Pope of the time. Cæsalpinus, as professor at Rome, did his striking work, for which the Italians, deservedly as it seems to most of the rest of the world except the English, proclaim him, and not Harvey, the discoverer of the circulation of the blood. Piccolomini was another of the great teachers, known more, indeed, as a teacher and a lecturer than as a discoverer. In the meantime, such men as Berengar of Carpi, whose work was done at Bologna, while that was in the Papal States, and Aranzi, who worked at the same university, were also attracting attention.

How lacking the Italians were in Chauvinism, that national jealousy, which so often hampers education, will be best appreciated from the fact that Vesalius, though a native of the Low Countries, was, after only a few years' residence in Italy, made a professor and head of a department at an Italian university, while he was still in his twenties. He eminently deserved the distinction, but it is extremely rare to find such recognition of youthful genius, especially in a foreign land. Merit was evidently the only factor that counted with the Italians for university preferment. What we find all through the history of the Renaissance particularly is that foreigners who went to Italy were made generously welcome, and if they had talent they were given magnifi-

cent opportunities for its development and facilities for the accomplishment of any work that they might care to do. They came away from Italy deeply attached to their masters and eminently ready to acknowledge how much they owed to the fine spirit of scholarship and inspiration to original work that was to be found in the peninsula. Vesalius, Linacre, Caius, Steno and Harvey are typical examples. The attitude of mind of many a student of medicine and science towards Germany, in the last half century, was anticipated by the affectionate regard to Italy of the students from other countries in Europe during many centuries, though especially during the Renaissance period.

In the first half century of the Renaissance, the latter part of the fifteenth century, of course Italy was the home of all kinds of studies, founded on the new birth of Greek ideas and Greek ideals into the modern world. When he was leaving Italy, at the end of this half century, Linacre built on one of the high summits of the Alps, from which he could get his last glimpse of the Italian kingdoms, an altar, on which he made burnt offers to the *Alma Mater Studiorum* that Italy had been to him. Italy's distinction was as great in the teaching of science at this time as in the classic languages. During this half century, both Copernicus surely, and Columbus probably, studied at Italian universities. The one was to give the world of his time

a new universe beyond the earth, the other, a new world here on earth, and while such men as Bishop Selling and, probably, Dean Colet and many other Englishmen went down to Italy for the humanities, it was the home of graduate work in the sciences too. Cusanus did his post-graduate work and wrote his book on the heavens, in which he proclaims, long before Copernicus, that the earth moves in the heavens as do the other stars, down in Italy. Here he did his great mathematical work, which has given him some twenty pages in Cantor's "History of Mathematics." During this same period Regiomontanus, the father of modern astronomy, was invited down from Nuremberg, to become the Papal Astrononer. Puerbach, the great teacher of mathematics and astronomy, had also received his training in Italy. Even Paracelsus had wandered in Italy, for a time, to round out his knowledge and learn what should not be taught to the next generations, and Rabelais eagerly seized the opportunity to get in touch with the great Italian scholars.

In the preceding century, the fourteenth, we have the records of great teachers who attracted the attention of students from all over the world to Italy. Mondinus and Bertrucci at Bologna, to whom both Mondeville and Guy de Chauliac went for their graduate work in anatomy, are striking examples. Though Montpellier attracted some attention, and Paris, after Lanfranc had

gone there from Italy, became another centre of graduate work, both yielded in prestige to Italy during all of this century, in spite of the political disturbances, which made peaceful studies so difficult. Whenever Italy is left alone in peace, undisturbed by political upheavals, she is the undisputed home of graduate work. In the midst of political disturbances, other countries occasionally loom up into prominence, but Italy's supremacy maintains itself.

During the thirteenth century Italy was the home of the greatest scientific teaching in the world. We have the books of the great surgeons, for instance, of this period. They anticipated nearly everything that we do in the modern time. They operated within the skull, within the thorax, and within the abdomen. Most people wonder how they could have done it without anæsthesia, but we know now that they had anæsthesia in several forms, one of them an inhalant, and " the mercies of these old surgeons, who put their patients to sleep before they cut them," have been extolled by the poets and writers of succeeding centuries. They anticipated our antisepsis by the use of strong wine as a dressing for wounds, and insisting on cleanliness as far as possible. They obtained union by first intention, it is to them we owe the term in its modern significance, and they boasted of obtaining linear scars after their operation wounds, which were never unsightly and which gradually came to

disappear almost entirely later. They invented an exaggerated Trendelenburg position for operations in hernia cases, placing the patient head down on a slanting board placed against the wall, and thus securing the dropping back of the intestines so desirable in these cases. They invented many instruments and methods of treatment, most of which we have clearly depicted for us in illustrations in the text-books they have left us, and copies of which may easily be consulted. They did excellent special work in the eye, the ear, and the nose, indeed, their work in the specialties is more surprising than in general surgery.

In dentistry their achievements are almost beyond belief. They filled the teeth with different metals, suggested the cleansing of them carefully and the washing out with spirits of wine before the filling was inserted so that one is not surprised to find, in the fifteenth century, pictures of many of our dental instruments, forceps, elevators, pelicans and the like, and the recommendation of the use of gold as the best filling, especially for front teeth. They thought that tin was an excellent medium for ordinary fillings and, curiously enough, dentists have come once more in comparatively recent years to recognize the value of this metal for tooth-filling, because of certain preservative effects it has.

No wonder students flocked to Italy for opportunities to get in intimate touch with men doing such work as this.

Medicine lagged behind surgery some, but this has always been more or less true at times when the development of the mechanic arts is marked. It is rather surprising, however, for many people to learn how much was accomplished in a thoroughly scientific spirit at this period. The dosage of opium was worked out rather carefully by Simon of Genoa, and it came to be used more judiciously; mercury seems to have been employed with a pretty good idea of its effects; the red-light treatment for small-pox, for which Finsen was rewarded by the Nobel Prize ten years ago, was recommended, and burnt sponge and seaweed, our chemical sources of iodine, were employed in many diseases in which we now use the iodides as alternatives. In hydrotherapy and dietetics much more was accomplished than could possibly be expected by any one who does not know the actual books of this time. Fresh air and good food were recommended, and the value of rest, and of rubbings, and of manipulations appreciated. It was in preventive medicine that this generation did most. By segregating lepers they eventually succeeded in blotting leprosy out of Europe, though at the beginning of the thirteenth century, as the result of the intercourse with the East during the Crusades, the disease must have been nearly as common as is tuberculosis now. They segregated erysipelas in separate hospitals and so prevented much suffering. Their hospitals were beautiful buildings and we

must look to those erected only in our own generation for structures that compare at all with the beautiful hospital buildings of the thirteenth, fourteenth and fifteenth centuries. Our hospitals of the early nineteenth century are not in the same class with them at all. The mediæval people had great architects, who seriously set themselves to solving the problem of hospital building just as they did of cathedral building, town-hall building, and monastery and castle building, and they succeeded quite as admirably as in all the other modes of architecture. I have given illustrations of the interior and the exterior of some of these hospitals in the recent edition of my book on "The Thirteenth, the Greatest of Centuries." They leave no doubt at all of how thoroughly these generations recognized the needs of their patients and set about supplying for them. The best of this post-graduate work was done in Italy. France, through Mondeville and Guy de Chauliac, drew her inspiration from Italy during the first half of the fourteenth century, especially while the Popes were at Avignon and Italy was in political convulsion, but Italian influence is everywhere known.

Even before the thirteenth century, however, Italy had been the home and the centre of graduate work and the *Mecca* for advanced students. Salerno, during the eleventh and twelfth centuries, was a centre of attraction for students of science. A great university arose, the nucleus of which

was probably a Benedictine school from the neighboring monastery of Monte Cassino. Its medical school was its most important department, and its first great teacher, Constantine, the African, born down on the northern coast of Africa, had wandered through the East as far as Hindustan before he came to awaken enthusiasm for study at Salerno. He then retired to write in the monastery of Monte Cassino, in order to enjoy the peace and quiet of the cloister and the friendship of the Abbot Desiderius during his work. The abbot was made Pope only a few years later and spoiled Constantine's dream of friendship perhaps, but Pope Victor proved an even more helpful patron than the abbot could have been.

Students flocked from all over Europe. Quackery began to make itself manifest and then came a series of laws regulating the practice of medicine and medical education, which culminate in the Emperor Frederick's law of the early thirteenth century that I have already cited for you. This was a pure-drug law as well. It forbade, under penalty of confiscation of movable goods, all substitution. The government inspector who allowed bad drugs to pass was put to death. Licenses to practise were issued after seven years' of study and a year of practice with a physician. How interesting it is to find that many of these licenses were issued to women. Astonishing as it may seem, this first great modern European

medical school in which Benedictine influence was so strong, not only permitted, not to say tolerated as we do, women medical students, but had even encouraged them at least in certain departments. The wise old Benedictines, knowing in the ways of humanity, handed over the department of women's diseases to the care of women professors, and we have their text-books and the records of their service and the traditions of their work.

Any one who thinks that the Salernitan School of physicians, which attracted so many students from the nations of Europe, did not do work worthy of its reputation, does not know the books of its professors, nor the comments on them by the German historians of medicine during the past decade or two, for they have been enthusiastic in praise. Salerno is supposed to have derived most of its medical knowledge from the Arabs, but German historians, like Gurlt, whose great history of surgery treats this time so well, deny this. There are no Arabian words to be found in their works, and that is the best test. Salerno passed on the torch of medical research and scientific investigations of all kinds to Bologna at the beginning of the thirteenth century. Bologna lighted the torches of the other North Italian universities and those of the French universities through Lanfranc, Mondeville and Guy de Chauliac, as we have seen. England and the Netherlands were to receive their first illumina-

tion, at least in the medical sciences, from the same source, through such men as John of Ardern and Yperman.

Italy has been, then, practically continuously the pilgrimage place for higher students ever since the tenth century. Nothing that I know is such a complete contradiction of many ordinarily accepted notions with regard to the attitude of the Church toward education and particularly scientific education. It is a commonplace in histories of education in English-speaking countries that the reason why there was little education and practically no development of physical science during the Middle Ages is that the Church feared for the faith of her children and preferred that they should be ignorant rather than lose their faith. Obscurantism was supposed to reign as the order of the day. It is a prevalent impression, in certain minds, even at the present day, in spite of the fact that many of our greatest medical discoverers of the nineteenth century were Catholics and that most of the greatest physicists and a great many of the greatest biologists of the nineteenth century were devout members of the Church, thoroughly satisfied with the attitude of the Church towards their favorite sciences that, not only is there no sympathy for, but, on the contrary, distinct opposition to science on the part of churchmen. What a commentary on that impression is the fact that something more than one-tenth of all the names

of Poggendorf's "Biographical Dictionary of Scientists" are Catholic priests. More than 500 out of less than 10,000 names are those of Jesuits. As in the past, so in the present, there has never been the slightest opposition to true science.

On the contrary, what we find is exactly the same patronage of science and scientists as there was of architecture, art, literature and the arts and crafts. In our growing knowledge of the Middle Ages, the place of the Church as the patron of these latter phases of æsthetic expression has come to be acknowledged and appreciated. It was not so a generation or two ago, when our knowledge of the Middle Ages was defective and unsympathetic. Now, just the same change must take place with regard to opinions as to the Church's attitude towards science. By far the great majority of the graduate teachers, investigators and original discoverers were clerics. Even the physicians were clergymen and the surgeons had at least minor orders and some of them more. Important works on botany, on physical geography, on zoölogy, on geology, on astronomy, on mathematics,—Cantor's history is full of their work and fame,—on magnetism, on chemistry, on psychology, on physics and mechanics, were written by ecclesiastics, many of whom afterwards became Bishops, Archbishops and Cardinals. One Pope even had been a physician and the health officer of an

Italian city before his election to the Papacy and many of these great students of science after death were canonized,—that is, declared worthy of the reverence of the faithful,—with all their works proclaimed to be of edifying significance.

Nothing so obliterates prejudices against the Church as a knowledge of the realities of her teaching and history. Every step in the renewal of our history in recent years has been favorable to the Church. The editors of the Cambridge Modern History, reëchoing the Count De Maistre's expression that history, during the last four centuries, had been a conspiracy against the truth, declared that the long conspiracy against the revelation of historical truth was at length breaking up, but that all the classical historians had to be rejected. What a striking commentary on that is the expression of Professor Von Ruville, the professor of history at the University of Halle-Wittenberg, Luther's university, who declared, in the account of his conversion to the Catholic Church two years ago, that until he read a Catholic book he never knew anything about the Catholic Church. He was a man past fifty, he had been a student all his life, he had written two important works on history himself, one of them on "The Peace of Westphalia," he had read any number of books that pretended to tell all about the Church, he had listened to professors who claimed to have studied all there was to know

about the Church, yet he confesses that he never knew anything about it until he read a Catholic book. This is the change that is coming over history. Men are going back to read the old Catholic books, the contemporary documents of genuine early history, and prejudice disappears just in proportion as they do.

Italy was, for eight centuries, continuously, the centre of graduate work in science of all kinds. When the Papacy flourished and was powerful, education was at its best. When politics disturbed the Papacy, education declined. There are various Papal documents quoted supposed to show Church opposition to anatomy, chemistry, surgery and the like, but I have shown that every one of them has quite a different meaning and that the story of the development of the very varieties of knowledge in question just after such supposed prohibitions is a complete contradiction of the so commonly accepted teaching in the matter. The Galileo case is quoted, but as Cardinal Newman well said, since this is the only case, it proves exactly the opposite of the meaning often attached to it. If in 800 years only once was the Church in opposition to science, it is the exception that proves the rule of patronage and encouragement. As I have already said, any one who understands the Galileo case does not talk about it as Church opposition to science.

You can appreciate, then, how gladly, as a

student of the glorious history of the relations of the Church to science in the past, I welcome your development here at the University of the College of St. Francis Xavier of a scientific department and how glad I am to take a part in the ceremonies of the dedication of your Science Hall. That some of the material resources from our United States, which have flowed so freely into the coffers of secular universities, should have come to you is indeed pleasant to learn. I know that they will be used to the best possible advantage, and that, following the traditions of the dear old Church, good work will be done in the sciences. We Catholics are the heirs, not of a generation or two or three in education, but of fully a hundred generations of successful effort in every department of education which has looked to the development of the many-sided mind of man and never to the creation of mere narrow specialism. A prominent educator on our side of the line once declared that a specialist was a man who knew so much more about one subject than he did about any other, that he was inclined to think he knew more about that subject than any one else did, to which I have ventured to add and that he is prone to think that if he should seriously set himself thinking about anything else, that he must also perforce soon know more about that than any one else does. We have a lot of such specialists at the present time and they are doing a lot of harm by their influence upon unthinking

readers. We need the broader education and I am sure that it will be given here. Hence my supreme pleasure in responding to your President's invitation to make the dedication address on this occasion.

FACTS AND TRUTHS IN EDUCATION

"A human truth which is always very much of a lie, hides as much of life as it displays. It is men who hold another truth, or, as it seems to us, perhaps, a dangerous lie, who can extend our restricted field of knowledge, and rouse our drowsy consciences."—ROBERT LOUIS STEVENSON.

"Well, we can gain a lot of facts, such as they are, but we may lose our own souls. This spirit has invaded school and college. Our young people go to the woods with pencil and notebook in hand; they drive sharp bargains with every flower and bird and tree they meet; they want tangible assets that can be put down in black and white. Nature as a living joy, something to love, to live with, to brood over, is now seldom thought of. It is only a mine to be worked and to be through with, a stream to be fished, a tree to be shaken, a field to be gleaned. With what desperate thoroughness the new men study the birds; and about all their studies yield is a mass of dry, unrelated facts."—"In the Noon of Science," by JOHN BURROUGHS, *Atlantic Monthly*, September, 1912.

FACTS AND TRUTHS IN EDUCATION *

YOUR committee was good enough to leave to me the selection of the subject for to-day's address, provided it was in the field of education. With some misgivings, then, I must confess, I am going to venture to talk to you about Facts and Truths in Education. As a mere medical educator, for years now out of the general field of education, I fear that I shall prove only a superficial looker-on in your special domain, and daring to make suggestions, I shall be like the traveller from Europe, who tells us all about ourselves the day after he lands from the steamer in our midst. It is your committee that are responsible by their request. Hold them to their responsibility very seriously.

Ordinarily, it is presumed that facts, indeed, must be truths. According to the old philosophers, of everything existent the transcendental qualities can all be predicated, and everything that is, is true and good and beautiful, but that is only as the old scholastics said *secundum quid,* that is according to a particular point of view.

* The main portion of the material for this address was gathered for the annual meeting of the Associate Alumnæ of The Normal College of the City of New York, May, 1911. It has been added to for various occasional lectures on education before groups of teachers.

So it is with facts. They may be truths, indeed they always are truths from one aspect, but they may prove to be anything but truths viewed from other standpoints. There is a very wise expression, as it seems to me, the author of which, alas! I cannot supply, which avers that "facts are not truths unless you have all the facts."

It has always seemed to me that in this age, when we are dwelling so much on facts, using them as the very warp and woof of education, when indeed the curricula of our schools, from the lowest to the highest, seem to be mainly dealing with facts, that we ought to be particularly careful as regards the meaning of facts and their significance as truths. Josh Billings once said that "it is not so much the ignorance of mankind that makes them ridiculous, as the knowing so many things that ain't so." There is nothing that we think we can afford less, nothing that more seriously disturbs us than to be ridiculous. It is perfectly possible to know many things and really be quite ignorant because the lack of completeness in our knowledge makes so many of our facts not truths at all. When I was a medical editor, not so many years ago, we had an expression with regard to the perilous incompleteness of facts that always seemed to me strikingly true though somewhat paradoxical. It will probably be rather interesting to you. We said that there were three kinds of lies. Lies, blank lies and statistics—in other company I

might supply that blank—though from that laugh I should judge there is no necessity for doing it here. Some one has been unkind enough to add that there were three kinds of liars. Liars, blank liars and medical experts. As a medical expert myself I venture to suggest that it is the incompleteness of our knowledge of all the facts with regard to sanity and insanity that makes this apparent tampering with the truth, which is not intentional, but is due only to the *fact* that the paucity of facts leads us astray.

Statistics are, or are supposed to be, classified facts. When we fail to get all their relations to each other and to their circumstances they may be anything but truths. How careful we must be of the teaching of facts, then. A new definition for a fool has been recently suggested. He is a man who has read everything and remembers it all. One thing is perfectly sure that if there ever were anybody who had read everything and remembered it all, he would never have the time, much less the mental energy, to do any thinking for himself and a fool is a man who does not think for himself. He would know many things and yet might know almost nothing in reality. I have known people who had the lecture habit, who for twenty years had been going around to lectures on all sorts of imaginable and unimaginable topics: lectures on African Exploration, on Travels in Farther India, on The Obscurity of Browning, on The Symbolism of Maeterlinck,

on How to Tell the Birds from the Wild Flowers, the Parrot from the Carrot, the Cowbird from the Cowslip, on How to Tell Opera from Ragtime, on The Cid, on Gothic Architecture, on The Nibelungen, and on everything else under the sun and a few other things besides, and who had such a heap of undigested information that they were positively hopelessly entangled in the facts that they knew—or thought they knew—and had not coördinated. Facts then may be most elusive things. Teaching them may prove to be merely an illusion. Their acquirement may be only a dissipation, not an education, of mind. Let us, above all, be sure, however, that, as teachers, we determine their significance before we insist on their being taken as truths.

Of course we are all aware of the number of myths that have crept into history and education. Because they were good stories, and pointed a moral or adorned a tale they have secured a foothold and indeed have often come to be thought of by students as having a deeper truth than the facts of history. A sceptical, critical generation has not spared our feelings in the matter of disposing of these myths. The story of Tell's cap and the shooting of the apple off his son's head has gone the way of the genial Rev. Dr. Weems' pleasant fable-with-a-moral, of Washington's little hatchet and the cherry tree. Columbus' egg and Raleigh's cloak have been discredited in the same way. Now they are trying

to take away from us Molly Pitcher and many another dramatic character, until it will be the hardest thing in the world to get children interested in history, because the personalities that appealed to them, particularly, will have disappeared.

Though we grown-ups have been realizing, for some time, that we would have to give up these pleasant old historical stories, most of us were inclined to think that, while history might be fallacious, at least science was founded on a rock and the facts and affirmations of science must be considered as enduring, no matter what the criticism that might be brought to bear upon them. Alas for our simple faith, however, many a precious bit of supposedly solid science is proving to be quite as mythical as the interesting anecdotes of history.

Dwelling, some years ago, in an ethnological article on the newer theory that there were probably but four races of men instead of the classic five of our early geographies,—that the brown race was probably a mere mixture and not a pure race,—I called attention to other revolutionary changes in science that had come about in the last few years. For instance it is now generally conceded that the centre of the earth is not a molten mass as used to be taught, and I think is yet as a rule, but that the density of our terrestrial sphere is entirely too high for it to have a liquid interior. The scientific explana-

tion of volcanoes which used to be considered most satisfactory required the theory of a molten earth centre, but we have changed all that. Now they are supposed to be the results of local and quite restricted action and not vents for any enormous central terrestrial pressure. The very latest theory would seem to be that they are probably the results of local accumulations of radio-active energy.

In nearly the same way we are told that we must no longer believe that the Gulf Stream and its Pacific correspondent, the Japanese Current, are the great equalizers and moderators of climate. The British Isles would not be constantly wrapped in ice, even if there were no Gulf Stream, in spite of the fact that they are in the latitude of Labrador, while New York is on the latitude of Naples. There are authoritative scientists who insist that we might dam the Gulf of Mexico, if that were possible, to-morrow and it would not produce the slightest effect upon the climate of Great Britain and Ireland and the western coast of Europe.

Grave fears even used to be expressed that if we built a tide-water canal at Panama there might be a diversion of the Gulf Stream, or some important portion of it, through that outlet into the Pacific Ocean, and that this would surely ruin the climate of Western Europe. There is absolutely no danger of that, however, and while Maury's theory of the Gulf Stream, as a climatic

agent, has attracted attention for many years and been the common teaching in our schools, often better known than important ethical principles, it is very probable that, as has been often emphasized, the old theory of Franklin of the eighteenth century, is the truer explanation of the facts of physical geography in question. The Trade Winds have much more to do with modifying the climate than the Gulf Stream, which is at most a very secondary agent in the matter. Some apparently good authorities go so far as to deny it any influence whatever, and insist that it never crosses the ocean at all, but disappears entirely some four or five hundred miles off the Newfoundland coast.

It is curious that many of these supposed truths, that we now have to give up, are in the realm of geography. We used to have a great American desert on our maps. It is probable that, between irrigation and intensive farming, there is no considerable portion of the United States that can, with any approach to truth, be thought of as a desert, and, of course, the Great American Desert has completely disappeared from our geographies. The Desert of Sahara used to be considered, by the generality of mankind in accordance with the teaching of the older time, as a level tract of sand, most of it below the level of the sea, and utterly incapable of supporting life. There was serious question of an engineering project, at one time, to flood it. As a matter

of fact there is a rather high range of mountains in what used to be considered the Desert of Sahara, and the main reason why men have not been able to penetrate into it more is because of some fierce tribes of natives, who inhabit it, and find such a good living in it that they want to keep others out.

Wherever we turn in science, however, we find this same tendency to reject facts that were supposed to be absolute truths and on some of which there have been built rather elaborate systems of thought. In medicine such phases of the relations of facts and truths particularly abound. One or two instances will serve to show the extent of our self-deception with them. There are still many people who think themselves well informed, who will tell you that they are suffering from the uric acid diathesis, or uric-acidæmia, or from lithæmia, an over-abundance of some substance not very clear in composition called lithic acid in their systems. As a matter of fact the advance of medical science has, for years, put such explanations of symptoms into the limbo of wornout theories. Various acid disturbances of the system are supposed to be the basis of chronic rheumatism and gout, but we know now that what used to be called chronic rheumatism is a hydra-headed affection of divers origins and including every possible source of pain and discomfort in damp weather, from flat-foot to writers' cramp, from lathe-workers' halt to the

"Charley-horse" or "the glass arm" of the athlete and the baseball player. We had a nice elaborate scientific explanation, but what we needed was more careful observation of phenomena and less-hasty, far-reaching conclusions from certain facts, which prove now not to be truths because we did not have all the facts. Lots of other similar presumptions of knowledge that are not knowledge might well be mentioned. We still talk about colds as if they were diseases caught from the cold weather, but colds are not the bother for Arctic and Antarctic explorers that they are in the temperate zones or even in the tropics. They are very rare high up in the Alps and common at sea-level. They are commonest in the temperate zone, not during severe cold weather, but during changeable weather, and we know now that they are due to infections and not to severities of temperature. How many people there are, who are still bilious, though this word harks back to the exploded humoral pathology of more than half a century ago, to a time before Virchow's great new chapter in modern medicine, that of cellular pathology. A single, simple discovery, that of Schwann, that all living tissues are composed of individual elements, which he called cells, led to the revolution of the medical thought of many centuries—though the world has not quite wakened up to it as yet.

A few examples of other revolutions in scien-

tific thought that have been worked in very recent years will still better illustrate my meaning. It used to be the common teaching, a few years ago, that the earth had been originally a molten mass of material, which was in gradual process of cooling down and that a time would come when it would be so cold that life could not exist on it. The sun also was supposed to be cooling down, so that less heat was coming each year, and it was only a question of time until the sun and the earth would be cold dead planets like the moon, for the latter was supposed to have passed through its hotter period and to be now in its fixed state of lifelessness. Even such distinguished physicists as Lord Kelvin accepted these ideas as facts and truths, and proceeded to make calculations as to how long the process of cooling down would take. At least two million years were demanded before life must necessarily disappear from the earth as a consequence of absence of heat. There were mathematicians, astronomers and geologists who demanded from twenty to two hundred millions of years for the process by which the earth has cooled down enough to permit the existence of life.

All this has been changed by a single discovery. A dozen of years ago the radio-active compounds began to attract attention and as a consequence of the study of them very different conclusions are now reached. Good scientific authorities do not hesitate to suggest that the earth is not cooling

down, but heating up, and that instead of life here being destroyed by cold, it will be destroyed by heat. The sun also is said to be heating up, as the result of accumulating energies from the radio-active materials in its composition. The moon, instead of being a hopelessly cold dead planet, is also in process of heating up, and a time will come when conditions on it will be such that life may, at least, be possible there. Of course, this is only a theory, but it is a theory that has some facts behind it and that represents a newer outlook in science. It is a complete contradiction of the scientific views of even twenty years ago, but such complete contradictions are not unusual in the history of science.

In other ways the discovery and investigation of radio-active substances has revolutionized scientific thinking. Some of the basic principles of physics and mechanics may have to be modified in order to accommodate them to the more recent observations. The radio-active substances are apparently constantly producing energy without any corresponding loss of energy on the part of other substances. They seem actually to be producing energy which did not exist before. The principle of the conservation of energy which seemed ultimate a generation ago is now apparently in process of disturbance preparatory to a new generalization. A single new set of observations, a few new facts, have disturbed what seemed almost fundamental truths. I know nothing that

illustrates so well the saying that facts are not truths unless you have all the facts.

The same set of observations has disturbed other phases of older thinking and teaching that were accepted by pupils, at least, as almost infallible. It was the custom to ridicule the foolish mediæval people, who believed in the existence of a philosopher's stone by means of which the baser metals could be changed into precious ores and who even were willing to supply large sums of money in order that certain pretentious charlatans might set about the manufacture of artificial gold and silver. Not long ago Sir William Ramsay, one of the greatest of living chemists, declared that he had seen one metal changing into another as the result of the action of radio-active substances. There is practically no one, now, who accepts the old teaching of some eighty or more independent elementary substances. The elements are merely states of matter, and matter itself is, probably, of but one kind, though existing under various forms. The atomic theory made a good working hypothesis, but will probably now have to be abandoned for some newer physico-chemical theory in which all matter will be proclaimed to be the same in its underlying substance, though existing in different modes, because of the amount of energies it contains. One of these modes may be changed into another and probably all of them will prove to be interchangeable, somewhat as we have found that all sub-

stances can be made to take the forms of liquid, solid and gas, though just as with regard to them it may require the application of an immense amount of energy to bring about the change.

A few years ago a prominent professor of chemistry, in this country, suggested that he would like to remove all traces of silver from a body of lead ore, in which silver so constantly is found, and then, after twenty years, examine the lead ore once more for traces of silver, confident that he would find that some had been manufactured by natural processes in the meantime. The almost constant association of lead and silver and copper and gold in ores, as mined, leads him to think that the baser metals are by radio-active processes being constantly changed, though slowly, and in very small quantities, into the precious metals.

Here we have a revolution, not alone in scientific knowledge, but also in history, and in our estimation of the scholarship and education of past generations. It was quite easy to think of the mediæval people as supremely foolish until we found that radium is, in a certain way at least, the philosopher's stone, and that their search for it was not so ridiculous after all.

In spite of all these disillusionments, with regard to supposed facts, they still continue to be the basis of our teaching and supposedly the firm foundations of education. The reason seems

to be that it is easy to test results by asking questions about them and to mark percentages of knowledge according to the memory for them. We know that they come and go in significance and that the facts of yesterday will be quite different to-morrow in a great many cases, but we are pragmatically confident that the teaching of what seems to be generally admitted must represent the storing of the mind with valuable information. We begin the teaching of our facts very early in life and continue to dwell on them all during the school years. It is a little hard to understand, then, why we should be surprised, that, when changes of teaching come in with regard to these facts, as new discoveries alter their significance, young folks should refuse any longer to accept current teaching with the confidence previously accorded. They learn to doubt about many things even more firmly founded than these facts and finally reach a sceptical state of mind, in which, whenever difficult or important decisions hinge on their knowledge, they are not willing to think that they know anything definitely enough to depend on their own conclusions.

Of course we all of us know just what happens with regard to not a little of this information as it filters through youthful minds. We all have seen some of the wonderful answers to examination questions that children give, and I, for one, find it very difficult to understand just how such

answers should be marked. Certainly the misinformation should not be construed as lack of information and least of all as representing ignorance. Of course, the only knowledge worth while is definite knowledge, but then humanity finds only too often that it has enjoyed, positively enjoyed, very definite knowledge about many things that it imagined it knew all about, though the issue proved that it was quite ignorant of them. We are in the childhood of the race in that regard and we accumulate misinformation and give it out just as confidently as the children who write the comic examination papers, though they themselves are entirely unconscious of the comicality. May I relieve a rather serious subject and one that is likely to be a little depressing by some illustrations. What would one do with the child who declared that "the pyramids were a range of mountains between Spain and France," or who declared that "Panama is a town of Colombo, where they are trying to make an isthmus," or that brilliant student of English history, who declared that "Queen Elizabeth rode from Kenilworth to Coventry with nothing on, until Sir Walter Raleigh offered her his cloak," or the little geographical genius, who declared that "the equator is a menagerie lion running round the centre of the earth," or that confident little student of physiology and anatomy, who, when asked to describe the spinal column, said that it was "a wavy bone in the middle of our backs,

and that our heads sat on one end of it and we sat on the other"?

Of course it is not alone the small children that make such comical mistakes, and our students of literature sometimes get their information with regard to important contributions to world literature by ear alone with some wonderful results. I believe that recently one promising student declared that one of the greatest masterpieces of English literature in the nineteenth century was "Graves' Energy," by Tennyson. Of course it would have been much better, very probably, for that young person to have written about "Gray's Elegy," but if all she knew about "Gray's Elegy" was its name, it really would seem that it did not, so far as knowledge goes, make any more difference than did the declaration, from a fellow-pupil, that Goldsmith wrote "The Deserted Traveller." Sometimes, of course, these bits of misinformation have a significance all their own. The young man who declared that the plural of spouse was spice, may have had some inklings of truth beyond the mere facts.

There seems little hope of our modifying our teaching of facts, however, for our examinations largely depend on them, and after all the examination has come to be looked upon as one of the inalienable features and one of the most important functions of education. We have become an examination-ridden people. Nobody,

any more, seems to learn anything except with an examination in view. Unless a subject counts for examinations, who cares about it? Most of the development of mind that constitutes real education, we are all free to confess, cannot be tested by examinations. Most of the people who are so successful in examinations have facilities rather than faculties. We are testing facility of memory, facility of expression, facility of thought, and only to a minor degree the possession of real knowledge. We all know this, but we are apt to think that we have only come to the precious knowledge in recent years, and that for that fact we are to be congratulated. Let me read you a passage from Mr. Frederic Harrison, written more than a quarter of a century ago, and expressing views that he had held for many years before that. It will show you that, for more than a generation, those who have been seriously thinking about the problem have recognized the evils of examinations, and yet, here we are, at the present time, in a worse state than ever, in regard to them, testing, not only pupils, but teachers by means of them, distrusting the judgment of the teacher and thinking that somehow a man can, in a few minutes, learn more about a student's knowledge than some one who has been in contact with him for months.

"The Examination, thus made the 'fountain of honor,' governs the whole course of study. If the teacher takes up a study not obviously grist

for the great Mill, the students cease to listen, and leave his classes. The instant he says something which sounds like an examination 'tip' every ear is erect, every pen takes down his words. The keen student of to-day is getting like the reporter of an evening journal: eager after matter that will tell, will make a good 'answer' capital examination 'copy.' The Mill governs the whole period of education, from *hic, haec, hoc,* to the final launch in a profession. I know little boys of ten, in the *ego et Balbus* stage, who are being 'ground' in printed examination papers, which I could not answer myself. And big men, older than Pitt, when he governed England, or Hannibal when he commanded armies, are still ruining their constitutions by cramming up 'analyses' and manuscript 'tips' of great 'coaches.'"

Some further sentences of Mr. Harrison's form an interesting commentary on how fashions rule in education and how completely our subjection to the teaching of facts, and to examinations with regard to them, has become almost the essence of education. He said, "The result is that the Frankenstein monster of examinations is becoming the master of education. Students and parents dare not waste time in study, which does not directly help towards success in the test." While, then, I have been insisting on how variable are the facts that often form the basis of education, do not think that I expect you to change the mode of teaching so as to get at truths instead of

facts, for until a more basic change in the system of education comes and the examination has been deposed from its tyrannous bad eminence, we cannot hope for amelioration of conditions. The most we can continue to do is point out the evils of the present, while hoping for the best in the future.

Surely it would be better not to teach so many facts than to teach so many that are not so. Of course this is an age, however, when, instead of wanting to know much about a few big subjects, people want to know a great many things about a host of little subjects. To know much about a few great subjects requires work. To know a little about a great many subjects is a dissipation of mind that suits our methods at the present time. Above all, the variety of subjects seems to be the main resource of the teacher in order to secure the pupil's interest. I have heard so much of that word interest in education that I have had a rather strong reaction against it. To my mind the keynote of education is not interest, but discipline. I am educated, if at the end of a college course I am able to take a subject that I do not like and apply my mind to it with some success for two hours. It would be very hard to test that achievement of education by an examination. That is the best result one gets from genuine education, however. We have lost sight of the word discipline almost entirely. It used to be that the pupils had to work, now it is the teacher.

Just inasmuch, however, as the teacher assumes the burden of the pupil, the pupil misses a portion of the precious development that comes from work. Goethe said, "work is given to men not only because the world needs it, but because the workman needs it. Work makes men."

At the present time, probably, all teachers are agreed that we are teaching too many facts and not developing the reasoning powers of pupils sufficiently. When many of these facts need afterwards to be corrected it is easy to understand how much of failure education seems to be. There is another phase of education, however, that is even more important. During the past generation we have taken to connecting many of these "facts" into series and drawing conclusions from them. The conclusions have been sometimes much wider than the premises and the result has often been the teaching of supposed scientific principles that afterwards prove to be anything but the fundamental truths that they were supposed to be. Occasionally these conclusions from groups of facts were really founded on insufficient observations, though the conclusions themselves, at times, seriously modified the attitude of mind toward great truths that had been accepted by the race for many generations.

As an old student of Virchow's, I have been very much interested in certain of his deprecations of the tendency in what is called modern science to jump from facts to conclusions and

then state the conclusions as if they were the truths of science. In 1877, in his address on "The Freedom of Science in the Modern State," delivered before the Association of German Naturalists and Physicians, in a session held in Munich, he said, in words that deserve frequently to be recalled by educators:

"Nothing has been more hazardous in the natural sciences, nothing has more damaged their progress and their place in the esteem of the people than a premature synthesis, that is, a premature connecting of scientific elements as yet discrepant, a leaping to conclusions without the justification of observed relations." . . . "Gentlemen, let us not forget that when the public behold a doctrine, which has been exhibited to them as certain, established, positive and claiming universal acceptance, proved to be faulty in its very foundations or discovered to be wilful and despotic in its essential and chief tendencies, many lose faith in science. Then they break forth into reproaches at the scientists. 'Ah, you yourselves are not quite sure. Your doctrine, which you call truth to-day, is to-morrow a lie. How can you demand that your teachings should form the subject of education and come to be a recognized part of our general knowledge?'" He was referring, particularly, to the teaching of theories of evolution, while as yet unproved.

One of the most interesting developments of teaching in the modern time, illustrating this

tendency to jump to conclusions, has been that evolution is taught as confidently in the schools as if it were an established fact, or as if there was a positive certainty about it that made it an important basis for teaching. The theory of evolution has been taught, even to boys and girls, with as much assurance as if there could be no possible doubt about it, and yet any one who is at all familiar with the literature of science cannot but be well aware of the absolute disagreement among themselves of great biological authorities on the subject and their advance often of what are quite incompatible explanations for it. As Professor Dwight, of Harvard, said not very long ago just at the time when our popular education has made everybody believe that the theory of evolution is as fundamental and absolutely settled as the theory of gravitation and when popular publications are prating about the triumph of Darwinism, the scientists are becoming more and more unsettled with regard to these problems and Darwinism, particularly, is fast losing ground among men of science. It began as a taking theory, supposed to be supported by facts, but the significance of these has gradually been modified until now the objective evidence for the theory has disappeared and it is accepted on almost entirely subjective grounds.

Professor Vernon Kellogg, whose work at Leland Stanford University, both as an independent teacher and in collaboration with President David

Starr Jordan, has given him deservedly a position of authority in biology in America, reviewed this subject concisely yet fully in his very interesting book "Darwinism To-day." * He has insisted that while we have a right to expect that the evidence for both the theory of descent and natural selection should be completely founded on facts, it rests, on the contrary, almost entirely on the feeling that it must be so, for how else could we explain the world around us? He said:

"What may for the moment detain us, however, is a reference to the curiously nearly completely subjective character of the evidence for both the theory of the descent and natural selection. Biology has been until now a science of observation; it is beginning to be one of observation plus experiment. The evidence for its principal theories might be expected to be thoroughly objective in character; to be of the nature of positive, observed, and perhaps experimentally proved, facts. How is it actually? Speaking by and large we only tell the general truth, when we declare that no indubitable cases of species forming or transforming, that is, of descent, have been observed; and that no recognized case of natural selection really selecting has been observed. I hasten to repeat the names of the Ancon sheep, the Paraguay cattle, the Porto Santo rabbit, the Artemias of Schmankewitch, and the de Vriesian evening primroses to show that I know my list of classic

* Henry Holt, New York, 1897.

possible exceptions to this denial of observed species forming, and to refer to Weldon's broad and narrow-fronted crabs as a case of what may be an observation of selection at work. But such a list, even if it could be extended to a score, or to a hundred, of cases, is ludicrous as objective proof of that descent and selection, under whose domination the forming of millions of species is supposed to have occurred."

The ordinary impressions with regard to evolution are, if possible, even more amusing than the wrong notions as to selection, because of their utter failure to realize the state of the problem though so many people talk confidently about it. Evolution, in the minds of most people, signifies the descent of species from one another. According to this form of the evolution theory, life, as we know it on the earth, began in some very low order, even below our microbes, and then gradually developed, until the present varied order of living things came into existence. This is what is known in biology as the theory of descent and a great many educated people seem to think that modern biologists are a unit in accepting it.

We have been discussing this theory now and questioning nature, in order to demonstrate it, for a little more than thirty years. We have been looking for the links between the species that must necessarily have occurred if it is true. Popularly the term missing links is reserved for the

hypothetical connection between man and the monkey. But, of course, as you readily appreciate, we should be able to point out the missing links between all the species. It might be possible that the missing links between man and the monkey would somehow have disappeared from view, traditional forms being presumably more perishable than enduring stages, but, at least, we should be able to find a large number of missing links between species, that is, forms intermediate to the various kinds of animals, and also the many different kinds of plants. As a matter of fact, in spite of all our search during more than half a century, we have found so few missing links and most of them dubious, that further search seems hopeless and we are ready to conclude that no series of slight gradations between the species ever existed. As a consequence, the paleontologists, who might reasonably be expected to be the best witnesses for Darwinism, have nearly always been found in opposition. Our own Agassiz and Cope and Dawson of Canada are typical examples.

As was pointed out many years ago, particularly by St. George Mivart, instead of the slight gradations between species occasionally there occur variations by rather large jumps that seem productive of species. This species forming by saltation has come to occupy a large share of attention in recent years, but as has been pointed out it requires some directing force to produce it

and so creative evolution has come to have a place in science. Once more the purposes of things are attracting attention. Many of the rising generations of biologists in Germany are teleologists.

How insecure are even the supposed fundamental principles of our biological science, and how much a new discovery may mean in revolutionizing biology, after all the study of the last half century, can perhaps be best appreciated from the sensation that was created by the bringing to notice of Mendel's laws. Mendel was an Augustinian monk, who studied pea-plants in the little monastery garden of the Augustinians at Brünn in Moravia, and who deduced, from his observations, a set of laws. He published his article on the subject in the little society proceedings of the Brünn Naturalists' Society and copies of it were placed on file in all the great libraries of Europe. His discoveries attracted no attention, however; they were too far ahead of their time. Just about the beginning of the new century four men in four different countries reached hints of these laws and, on looking up the literature, found that their work had all been anticipated. Since then scarcely a biological journal has been issued without articles on Mendelism or some development of his work. Bateson, of the University of Cambridge, declared that if Darwin had known of Mendel's work it would have modified many of his ideas, and Darwin would not have written some of his later theories. One

thing is sure, that the Mendelian principles do not make for any such gradual evolution as would come from natural selection and the whole important subject of heredity is now open for experimental work and observation, instead of the theorizing that characterized the later half of the nineteenth century.

When a few years ago the editor of the *Revue des Deux Mondes,* probably the best known of French periodicals, proclaimed "the bankruptcy of science," he based his proclamation that a great many of the claims of scientists could not be paid in the current coin of truth on the failure of evolutionary theories, and his reference was more to the biological than to other sciences. Some wonderful claims of the power of biology to explain the universe and man himself were made in the theories of evolution, of the latter half of the nineteenth century. None of these claims were substantiated, and as Ambassador Bryce said, not long ago, the mists that hang around man's destiny and origin are just as deep now as they ever were. The great French editor, M. Brunetière, had attempted to collect some of the claims in this matter and had found that the discounts now demanded on them were so large as to constitute a virtual confession of bankruptcy. He was only saying, twenty-five years after Virchow's declaration, that what Virchow had prophesied had now come true.

Such premature teaching of scientific conclu-

sions as truths brought discredit on science and is sure to bring much more. In the meantime it very seriously disturbed men's minds with regard to a great many truths and teachings, important in the matter of the conduct of life and of a right view of the universe. Nowhere, probably, does the relation of facts and truths stand out so prominently as in the exaggerated ideas that have been conveyed to pupils, old and young, of the true significance of various evolutionary theories. At the present moment the professors of biology in a dozen of the most important universities of the world are not Darwinians. Paris, Berlin, St. Petersburg, Heidelberg, Columbia, Vienna, are examples. As Professor Dwight said, just at the moment when scientists are coming to the knowledge of how little they know about evolution, the rest of the world has come practically to the conviction that all is known about it. Darwinism is supposed to be the ordinary teaching of great scientific professors, but, as now taught, it represents only the over-hasty conclusions of mediocre teachers, bound to have some definite opinions for teaching, who take all their knowledge at second-hand and are often not familiar enough with present-day primary scientific literature to know what a great reaction has set in in this matter.

Probably in nothing will our education be more amusing to succeeding generations than in its calm proclamation as truths of a number of theories

in biology, sexual selection, protective mimicry, and the like, which attracted attention only because of their superficiality, and because they seemed to have the seductive virtue of showing that the men of previous generations knew nothing at all about the great problems that we were coming to discuss so learnedly and indeed solving so completely for the men of our own and future generations! That may seem an exaggerated reactionary opinion on my part, but I think there is abundant justification for it in the recent books of distinguished scientists.

Perhaps I am more ready to see this reaction than most people, because of my training. My first teacher of biology was Professor Cope, probably our greatest American biologist of the end of the nineteenth century, who was not a Darwinian, but a Neo-Lamarckian. I spent a precious year and a half in Virchow's laboratory and remember what a shock it was for American students generally to have the great German pathologist say, quite calmly, that Darwinism (not Darwin, but the school founded under his name) had wasted fifty years of biology in Europe, bolstering up a theory, instead of making observations that would be enduringly valuable in the biological sciences. Many a recent German scientist at least has reached this same attitude, until it has become quite the fashion in biological circles to gird at Darwinism.

Of course the position ordinarily assumed with

regard to natural selection is quite amusingly unscientific. Advocates of the theory seem to think that natural selection is responsible for the *origin* of species, in the sense of being an efficient cause of new species. As the term implies, however, selection never originates anything, but only selects and hands over, for preservation, what is already in existence. Darwin expressed some regret in his letters that he had not made the principal title of his book, what is now the secondary title, " The Preservation of Favored Races in the Struggle for Existence," rather than have called it, as he did at the urging of friends, " The Origin of Species."

The President of our largest Eastern university, in a paper read at the Annual Meeting of The American Academy of Arts and Sciences at the New Theatre, last Christmas time, reviewed the place of Darwinism in the social sciences, by saying that a distinguished naturalist, having about the middle of the nineteenth century admirably studied the habits of climbing plants, of earthworms, and the coloration of birds, came to some startling conclusions as to the relation of all living things to each other. The significance of these conclusions, overzealous disciples proceeded to exaggerate. Certain principles were deduced from the master's work, which were supposed to modify all of our philosophic thinking and to make human life a very different thing in origin, significance and destiny from what it had been

before. Such a summary characterization is by no means the caricature of Darwinism it might seem, at first glance, to be to those brought up to worship at the shrine of Darwin. It is instead a rather literal statement of the great English naturalist's work. It would be well for most teachers to keep that expression before them, for it is much nearer the truth than are many of the enthusiastic settings forth of Darwin's contributions to science that have been fashionable.

Above all, let us not take the work of the last generation so seriously. There are phases of discussion of natural selection, that have been the butt of much ridicule in recent years. Probably nothing has been more common as a topic for such poking of fun than the theory of mimicry, that is of change of color on the part of animals to suit their environment so as to secure prey or avoid enemies. Much more fun can be made of it than of the exaggerations of teleology that formed the favorite butt for biologists in the past. The white bear is white, according to this theory, because he can steal on his prey successfully in the white frozen North. But the white man also living at the far North has light hair too. The light-haired Scandinavians are the familiar types of this. Are they blonds for the same reasons that the bear is said to be white? Color in men and animals is a result of pigmentary deposit in the skin, under the influence of the sun. Where the sun's rays, as at the North, are not

so direct, men and animals lack to a great extent the pigmentation common in hotter climates.

Most of the striking cases of protective coloration or mimicry have been explained away quite as the white bear's whiteness. Color and lack of color are due to external physical causes, not biological factors. The colored fishes that resemble seaweeds or corals, the butterfly that looks like a dead leaf and the simulation of dangerous creatures by harmless organisms and the like, have all come in for their share of ridicule in recent years. A little truth there is acknowledged to be left in the theory of protective mimicry, but it is so small, compared to what it used to be, as to be quite discouraging for natural selectionists. I remember once asking a youthful university lecturer who was making much for popular audiences of the pretty legends and myths of protective mimicry, whether he believed them all. His reply was that, of course, doubt had been thrown on many phases of the theory, but the stories were so pretty and appealed so well to audiences that he still used them. The myths of science are as popular in their appeal as myths in other departments of knowledge.

The fate that has come to a large extent to mimicry is also overtaking in about the same way what is known as the struggle for life. Few people seem to realize that the struggle for life within a species amounts to but little and indeed

is entirely overshrouded by mutual aid. Animals help their kind and especially protect and foster the young and the weak. When sociology adopted biological principles as the basis for new developments, the struggle for life was taken as perhaps the most important consideration. How often have men not argued that the survival of the fittest in the struggle for life was the great law of biology and that the weakest must go to the wall. The son of a well-known American millionaire said not long since that, in order to make an American Beauty rose, the gardener had to sacrifice a number of buds all around it in order to keep them from diverting nutrition from the favored sister. So it was better presumably that the small tradesman should be plucked off, to give place to a great commercial organization. The comparison with the American Beauty rose was particularly odorous as a defence of huge combinations of capital. It was supposed to be in accordance with biology, however, and the struggle for life. Men have allowed some of their sense of pity for their fellows to be taken from them by this supposed biological law of the struggle for life and the survival of the fittest. What we find in nature, however, is exactly the opposite of their interpretation of the struggle for life. Mutual aid is the most salient characteristic of animal life. Animals throughout creation live together in communities of various kinds in order to protect and help each

other. Of course the bees and the ants and the wasps, minute creatures that they are, might be expected to live community lives, sacrificing personal privileges for the sake of the common good. But this is also true for the largest animals. Elephants herd together, and the young and the recent mothers have the place of safety in the centre of the herd so as to be protected from prowling lions and tigers. Horses run in droves to protect themselves from wolves and other animals. In case of attack a circle is formed with heads towards the centre, the colts and the mothers are placed in the centre of this and only a battery of heels is presented to the enemy. The hoofed animals all go in herds. Evidently the ordinary idea of the struggle for life will have to be modified by the knowledge we have gained of animal habits.

In my younger years we used to hear much about sexual selection as an important factor in evolution. Female animals were supposed to select their partners because of their colors, or their appearance, or their special power of singing or some other quality that indicated a high degree of sexual attractiveness. Very little is heard about sexual selection now, and even what seemed the most obvious parts of the theory have had doubts cast on them. Mr. John Burroughs recently reviewed some of the special observations made with regard to the sense powers of animals and did not hesitate to suggest that

possibly female birds do not hear the notes of the male. Certain it is that they go on with their work of building the nest and caring for the young without paying any attention to it, and it must affect them very little. Some of the birds and animals that are supposed to have been influenced by color in the selection of their mates have been accused, if not convicted, of color-blindness. Song and color are expressions of the surplus vitality of sex, but the translation of them into human terms completely perverted their significance. Just the same sort of perversion has come from putting human thoughts and human motives into animal activities generally. We have not added to knowledge, but have only exercised our imaginative faculty in the creation of myths. Such myth-making has always been common in the history of the race, only we have rather prided ourselves on being free from it.

The theory of evolution is only a hypothesis that in the present state of our knowledge seems to explain many facts of the world around us that are otherwise inexplicable. We have had many such hypotheses in the history of science that have afterwards been rejected. Dalton's atomic theory in chemistry enabled us to explain many things and even, by means of Mitscherlich's law, to foretell the existence of substances of which as yet we had no knowledge. Such powers of prophecy in a theory are supposed to indicate

its fundamental truth, yet it seems likely that the atomic theory will eventually be rejected for some other of which as yet we have little inkling. The Ptolemaic theory not only explained the facts of astronomy as they were known down to Copernicus' time but it seemed to many people that the power to foretell eclipses and to calculate dates in the past by the story of eclipses meant the essential truth of the theory. Even so late as Lord Bacon's time he refused to accept the Copernican theory because it did not explain the known facts of astronomy so well as the Ptolemaic theory. It was thought that any general acceptance of the Copernican theory would contradict Christian beliefs completely. This same thing was said, though probably in a less degree, of the acceptance of the evolutionary theory. Now fifty years after the announcement of evolution and above four hundred years after the Copernican theory, it is seen that no such effect was ever seriously threatened. Certain narrow personal ideas of Christianity were affected, but no more.

Each generation exaggerates the significance of its own scientific theories and their far-reaching import, just as each generation overvalues its own literature. To use either the science or the literature of a particular generation as the basis of general education in that generation is always sure to be narrowing in its influence upon youthful minds. It is the knowledge that

has stood the test of time and of consideration by many generations of men, just as it is the literature that has appealed to many generations, that must constitute the basis of such education as will be broadening. We have been in too much of a hurry to teach as truths the conclusions from the facts observed in our own and the immediately preceding generation, forgetting that facts are not truths unless we have all the facts. As a result there are many discounts from their teaching that the students of recent years will have to accept in order to get at truth. Shall we learn the lesson from this of taking as the subject of education materials that are likely to be more lasting and have a wider significance than the special interests of comparatively recent years? This is the real problem of facts and truths in education.

When we look back on the last half century of teaching, then, and try to estimate the place it will hold in the history of education, it would seem that the critical historian of a future generation will be likely to say that we became so much interested in the facts and observations in physical science that seemed novel to us, that we accepted them too readily and immediately proceeded to use them as the most important portion of our teaching. With the development of science, however, we had to take back many of the supposed discoveries, and, as a consequence, our teaching came to be discredited. We hurt

it by over-hasty jumping to conclusions and assumptions that proved to be unjustified. The result was a superficiality of education and a lack of training in logic and in power of thinking that left us without true scholarship. We tried to teach many things rather than much, with the consequence that we loaded down the minds of our generation with many facts that proved to have nothing like the importance they were supposed to have when taught and conclusions that were contradicted by subsequent scientific developments.

Perhaps that is too hard a judgment to make of our education. You know better than I do, however, how many complaints there are of our failure in teaching, and I have only been trying to point out some of the reasons. As to their value I must leave you to judge.

THE WOMEN OF TWO REPUBLICS

"*Nae si mulier pudere, quod non oportet, coeperit; quod oportet, non pudebit.*"—LIVY.

[Be assured that if once a woman begins to be ashamed of what she ought not to be ashamed of, soon she will not be ashamed of what she ought.]

"*Dummodo morata recte veniat, dotata est satis.*"—PLAUTUS.

[Provided a woman be well principled, she has dowry enough.]

THE WOMEN OF TWO REPUBLICS*

In recent years the development of historical research along scientific lines has led up naturally to the study of comparative history, until this historical department has come to claim a place beside the comparative sciences generally, comparative literature, philology and other phases of investigation in which comparisons may serve to be illuminating. Perhaps nowhere in the domain of history have comparisons seemed more striking than those which can be traced in the almost obvious parallels between the great Roman republic and our own. There are many significant details of similarity in the rise, in spite of almost insurmountable obstacles, of the two struggling, enterprising peoples to be one of the great world powers, each in its own time. The Roman republic literally came to rule the world, and though then the republican form of government gradually disappeared in the Empire, that phase of her history has only served as a warning to the great sister republic of the modern time that some such fate may be in store for her. At Rome, as with us, the republic began in poverty and struggle, and the end of

* A lecture for the League for the Civic Education of Women, delivered at the Waldorf Hotel, New-York, January, 1911.

their precious republican liberties came after wealth had been acquired and the privileged classes had come to absorb most of the rights, when, as has been said, "the rich were getting richer and the poor were getting poorer," and the rule "of the people, by the people, and for the people" gradually disappeared, though, strange as it may appear and surely a warning for us, the Romans themselves seem not to have realized that fact for a considerable period after the actual coming of the Empire.

Parallels of the history of Rome and of the United States have often been supposed to be particularly informing in matters of civics for students of political history, and so it seemed to me, when your committee asked me to talk again before the League for the Civic Education of Women, that a comparison between the women of that old republic and our own might prove as valuably suggestive as anything that I could say to you. My lecture for you last year on Phases of Feminine Education,* showed you that there is much more to be learned from the past than most of us think. Comparisons are said to be odious, but they are nearly always interesting. Information as information is nearly always tiresome. Advice is generally given to dull ears, but it is possible that some of the suggestions to be drawn from a comparison of this

*See "Education, How Old the New," Fordham University Press, New York.

kind may throw light on political questions in the fundamental problems that underlie them, rather than in the practical details of application that are so often supposed to constitute the whole of politics. It is basic problems of social civics rather than polities that we shall take up, then.

Ordinarily it might be presumed that, after all, there could be little comparison between the women of Rome and our own, because the women of ancient times exercised very little influence over the life around them. There is a very general impression that the women of Rome, like the women of Greece, were largely or indeed almost entirely segregated from public life, set apart from all their husbands' outside interests, dwelling in a particular portion of the house and scarcely ever appearing in public. Knowledge in this matter is not so much explicit as implicit. People are quite sure that never until our time did women enjoy anything like freedom of spirit or intellect or liberty in any way. How utterly false this notion is may be gathered from a few sentences of the preface to his "Lives of Illustrious Romans" written by Cornelius Nepos, which is usually one of the first books put into the hands of boys who learn Latin. Nepos said, in a passage that Ferrero, the Italian historian, declared in his book on "The Women of the Cæsars" to be "one of the most significant in all the little work":—

"Many things that among the Greeks are considered improper and unfitting are permitted by our customs. Is there by chance a Roman who is ashamed to take his wife to a dinner away from home? Does it happen that the mistress of the house in any family does not enter the anterooms frequented by strangers and show herself among them? Not so in Greece: there the woman accepts only invitations among families to which she is related, and she remains withdrawn in that inner part of the house which is called the gynæceum, where only the nearest relatives are admitted."

To a great extent the women of Rome enjoyed all the liberties accorded to women in our times. Indeed their social restraints were probably, at the end of the republic, not so rigid as our own; certainly not so compelling as ours were a generation ago. It is sad to relate that the precious privileges of liberty degenerated ultimately into license, and social restraints of all kinds were thrown off.

The reason for this greater social freedom of the Roman women, as compared to their Greek sisters, is not far to seek. Feminine liberty was founded on a very similar set of circumstances to that which gave their independence to American women. In the early days of our republic women had to be able to rely on themselves in many emergencies. Often in Colonial days they lived out on the confines of civilization, sometimes

miles away from a town, and they had to care for themselves during the days, at times even weeks, when their husbands were necessarily absent on business. Those who lived in country houses had to manage the family estate and care for servants while husbands were away on politics or at war. Comparatively few women were unmarried, though there were not a few widows, and these had to care for themselves and their families. As a consequence, the tradition developed very naturally that a woman was able to care for herself and that she could be trusted to care for herself. The daughters and grand-daughters of these pioneer women were naturally accorded the rights and privileges that their foremothers had obtained for themselves by the demonstration of their capacity to care for themselves and be trusted. Hence American women have a freedom and independence much greater than those of the corresponding classes in Europe.

The early mothers of the Roman republic went through corresponding conditions. Rome's business was ever mainly war. The little city republic was almost continually at war with its neighbors. During these wars many of the Roman citizens were necessarily absent, leaving the care of their households and families to their wives, and as a consequence that same spirit of independence and of freedom developed among them as among our American women. They were thoroughly trusted, showed themselves worthy of

the trust and gradually acquired the privileges that always come under such circumstances. Instead of being relegated to a special part of the house then, as were the Greek women, they met their husbands' friends freely, dined out often, appeared on the street whenever necessary, had a good deal to say in the management of their households and in general enjoyed practically all of the privileges of modern womanhood.

This makes the comparison between the two sets of women during the history of the two republics all the more interesting, because the freedom of life and independence of spirit which differentiated the women of the two republics from their sisters in neighboring countries, is the beginning of a parallel that may be carried out in many more details than any one who has not given special attention to the subject would be likely to think.

We sometimes forget how much that pioneer life tried the women of the early Colonial days. Much sympathy has been expressed for the men, but the harder rôle of the women has been sometimes utterly unappreciated. At a Pilgrim Dinner some years ago, after many speakers had lauded the virtues and praised the sterling qualities of the Pilgrim Fathers and told how they withstood the hardships of that first awful winter, the dangers from the Indians, the suffering from insufficient food, the risks of disease and all the other hardships of the early years, Rev. Edward

Everett Hale arose and spoke to the toast "The Pilgrim Mothers." He said that all the laudatory things that had been uttered with regard to the Pilgrim Fathers should be said with redoubled emphasis of the Pilgrim Mothers. They, too, had withstood that first awful winter and the subsequent dangers from disease and famine and Indian wars, in the midst of the trials of a hitherto unsettled country, but besides all this they had stood the Pilgrim Fathers. It was in the midst of these trials, however, that character was built up and the Colonial women naturally and rightly came to their own. Ease and luxury readily enervate and make strict guardianship and chaperonage necessary. That was illustrated quite as well at Rome as it has been often since and never perhaps more strikingly than in our own time.

The beginning of the history of the Women of the Roman Republic most of us know something about. It will be recalled that there were very few women in the little town of Rome at the beginning of its history. The population, I fear, consisted of scarcely more than a number of adventurers of all kinds, who loved fighting for its own sake and had gathered together in this small hill town at the foot of the Palatine Mount, which was probably an outpost to protect the northern frontier of Latium, "the flat country," against the Etruscans. The men of the post wanted wives and, there being no other

way, they went out to a neighboring Sabine town on a festival day when the maidens of the place were having a processional celebration that led them beyond the walls, where, without the protection of the men of the town, the Romans carried off a number of them. One of the earliest historical pictures of which I have any memory was called the Rape of the Sabines. Each of the young warriors in the picture laden with a maiden was bravely carrying her off to his home at Rome. In my memory there was one young Roman rather fair to look upon who evidently had been lamed in some of the wars and who, though pursuing a fair Sabine, was apparently not likely to capture her. I fear I felt with regard to him a little like the child at Sunday-school who complained of the picture of the missionaries and the cannibals that there was one cannibal who had no missionary for himself. The Sabine maid, however, was looking back over her shoulder so intently at her pursuer that I have often thought since, that possibly a kindly trip over some obstacle in her path, unseen because she was so occupied with looking back, might still give her Roman follower, even though lame, an opportunity to catch her and not leave him entirely disconsolate. The maidens of history do not always escape, even with the handicap in their favor.

According to the legend, the war that broke out between the Romans and the Sabines as a con-

sequence of this matrimonial foray threatened to destroy both peoples. They were about to meet in a pitched battle that would surely have led to the sacrifice of many lives only that the Sabine women who had been carried off, realizing that the result of the battle, no matter what the issue, would destroy either their fathers and brothers or their husbands, interposed between the combatants. They succeeded in bringing about not only peace but a confederacy between the two peoples and a new city was established, very probably at the foot of what is now the Capitoline Hill, which became the stronghold of the new and larger city.

It might readily seem that at least there was no such incident as this in our early history and that the women of our American republic might look back quite complacently with the thought that their ancestral mothers had had to submit to no such unromantic wooing. It may be recalled, however, that in Virginia at least the planters, desiring wives and having none, the Virginia Company gathered a number of young women in England, promising them husbands, and shipped them over to the Colony. When the announcement of their coming was made the planters flocked down to the wharf and each paid a definite number of pounds of tobacco as the passage money for the wife that he took home with him. As some of them were probably much more desirable than others, from the physical

standpoint at least, it seems not unlikely that a larger sum was collected for the younger and prettier ones and that this excess above the average helped to pay the passage of some of those whose charms would not quite tempt the planter to pay the full sum. In Virginia as in Rome this rather hit-and-miss fashion of getting a wife seems to have worked out very well in practice, for we do not hear of any serious disagreements and there were no divorces so far as we know, and the mothers of the old families of Virginia were thoroughly respected. Within a very short time we find the Sabine women become Roman wives pleading for their husbands with their fathers and brothers. Marriage with less preliminaries than are usually considered necessary now would not seem to have been the prelude of disagreement and unhappiness that is often augured for it in our time.

In another part of the colonies, New England, there are some historical traditions that would seem to indicate that a provision of wives was obtained in something of the same way. In Massachusetts while a number of women came over on the *Mayflower* and successive vessels, a great many more men than women migrated to the colony. Let me hasten to say that I do not think that this is the reason why Massachusetts, in compensation as it were, now has a disproportion of the sexes the other way, for the numbers seem

to have become equalized before the end of the seventeenth century. It appears not unlikely, however, that there were some importations of wives here too. My friend Dr. Emmet, who is very well acquainted with our sources of American history and whose collection of documents illustrating its details is one of the best of its kind ever made, tells me that there are definite records that Cromwell sent some shiploads of Irish girls to New England during the course of his effort to break the Irish spirit and make Ireland an English province. We know that many shiploads of young women between twenty and thirty were sent to the British West Indies, but there are some documents that point also to the gathering of young women to be shipped to New England, though we have no historical records, I believe, of their landing here. It is one of the problems that remain to be unravelled by some future historian. Early Roman wives and early American wives, however, have, as I have said, many more points in common than we might be likely to think.

Sometimes it is thought, however, that we know very little about the women of Rome. It is true that we do not possess as much information about them as we would like to, for history unfortunately has been largely a matter of kings and battles, wars and warriors, politics and diplomacy rather than the life of the people. In recent years, however, historians have come to

recognize that history must treat more of the life of the people, their interests, their difficulties, their aspirations, their customs and above all their striving after social betterment and the benefit of the common weal. Recent history has largely occupied itself with details of social problems, and women and their affairs have occupied a very fair share of this attention.

Even before the newer history came in, however, there were very interesting details of the story of feminine interests and occupations at hand. Most people are likely to recall at once the story of Cornelia, the mother of the Gracchi, and the two boys whom she presented to her visitor as her jewels. A great many, however, seem inclined to think that this is rather a parable than a real historical incident and that it has very little meaning for the history of the times. Besides, most people know it entirely distinct and separate from any of its connections with Roman history.

The story itself illustrates very well how many phases of Roman life anticipated those of our own time. Ordinarily it has been narrated for children but, if told in terms that show how old is the new in the social order, it has many hints of special significance for grown-ups. Cornelia belonged to one of the old Roman senatorial families, one of the oldest families in the city. At this time, a little more than a century and a half before Christ, they formed a social set distinct

from others in the city and particularly from the newer citizens who had secured place and influence because of their wealth, or political associations, or some other favoring circumstance. There was a constant striving on the part of those who did not belong to the "best" social set, to get into relations with the "best people." One of the new rich women had apparently somehow found a place on Cornelia's calling list. She called one day, when Cornelia was probably announced as at home, to show this prominent member of the Roman "four hundred" the magnificent jewels that she owned. After she had displayed them, she asked, with that lack of tact that so often characterizes the social climber, to see Cornelia's jewels. It is very probable that she knew perfectly well that Cornelia's jewels were almost as nothing compared to those that she herself was displaying. Cornelia countered, gently but efficiently, by calling to her two boys, placing a hand on their shoulders and saying: "These are my jewels."

I wonder how many people know anything of the rest of the story of Cornelia and her jewels. Most people know this much but no more. For them the incident has no connection with the Roman history of the time. I remember once asking a very well-read woman if she recalled what had become of Cornelia's jewels. She said that she did not very well, but that she had a hazy remembrance that at least one of them had

been the centre of a political squabble at Rome and had lost his life. She was not quite sure whether his brother had not trodden the same path, and she added with a sigh that sometimes mother's jewels did not grow up to be all that had been expected of them when they were young, and this seemed to have been the case with Cornelia's boys.

As a matter of fact, however, the end of this story of Cornelia and her boys is one of the most important in Roman history and one of the most significant details with regard to the place of feminine influence in Roman politics. It is particularly interesting because it serves to illustrate certain phases of political life and social danger through which the Roman republic was passing at that time, which have their counterpart in our own history. These phases of American political life will need remedies as drastic and men as brave and as self-sacrificing as those that were found in the time of Cornelia and her sons, for in their lives they proved the high value of a great good mother's influence.

It is true that the two Gracchi perished in popular disturbances in the city, but if there is anything that would demonstrate how precious were these jewels of the Roman mother it is the manner of their deaths. A condition of affairs had arisen at Rome as a result of which, in familiar phrase, "the rich were getting richer and the poor were getting poorer." Tiberius Grac-

chus at the age of thirty or a little more found himself in a position where his influence could be exerted for the sake of the poor. The class of independent farmers of small means was rapidly disappearing from Italy and these small farms were being absorbed into large estates held by the wealthy and cultivated by slave labor. The Roman peasantry were being forced into the cities, the ranks of the unemployed were swelling in numbers and poverty and crowding and all the attendant evils of large city life were making themselves poignantly felt. Tiberius Gracchus tried to bring about a better subdivision of the land by reviving an old law, that of Licinius, which limited the amount of public land that each citizen might occupy.

Of course there was a storm at once. Young Gracchus was proclaimed a disturber of the peace, a demagogue unsettling vested rights, seriously interfering with the order of things as they were. He succeeded in carrying out some of these reforms but only after great opposition. He insisted on securing further reforms. As a consequence, at the time of the elections there were disturbances in the streets and in the midst of them he and three hundred of his partisans were put to death, apparently by the hirelings of the wealthier classes. It is true that he himself was violating the law in standing for reelection, but there seems no doubt about the purity of his motives nor the fact that he was

trying as far as he knew how to secure their rights for the poor.

A little more than ten years later his brother Caius tried to carry out a similar policy. It was not that a brilliant future was lacking for him without seeking to curry political favor with the people. He was a brother-in-law of Scipio Africanus the Younger and had served under him in Spain. He was quæstor in Sardinia when, at the age of scarcely more than thirty, he was elected tribune of the people. He renewed the Agrarian law passed by his brother Tiberius and brought forward a series of resolutions looking to the substitution of a more democratic for the existing aristocratic form of republican government. He was re-elected to the tribuneship, but failed of re-election the third time, because he was far-seeing enough to want to extend the citizenship of Rome to all the Latins. That was only to come in the after-time. In the midst of manifestly planned disturbances after an election he, too, lost his life. And so the mother lost both her boys, but what mother would not be proud to think that her sons had perished in the struggle to secure rights for the people and keep the few wealthy aristocrats from absorbing all the opportunities of life, leaving the great body of the people to almost hopeless poverty and degradation?

How much their mother stood for in all this is rather easy to understand, knowing as much

as we do of her influence over them. Abbott, in his "Society and Politics in Ancient Rome," in the chapter on Women in Public Affairs under the Roman Republic, says, "Although history has not left us an account of the circumstances under which these laws (certain laws giving women the control of their property in life and by will as well as other privileges) were passed, so that we hear little more of the united political action of women, we do hear much of the great influence exerted by individual women under the late republic. To begin with the earliest authentic instance of the sort, a woman may well be given credit for initiating the great revolution in society and government which, beginning toward the close of the second century before our era, worked itself out into the democratic empire of Julius Cæsar and the dyarchy of Augustus, for Plutarch is probably right when he intimates that Tiberius Gracchus, the forerunner of the revolution, drew his inspiration and the direct impulse to his land reforms from the teachings and admonitions of his mother Cornelia, and from what we know of her character it would seem highly probable that she trained her other son Gaius (Caius) to take up the work of his brother at the point where Tiberius left it when he fell a victim to his political enemies. She spent her declining years in her villa near Misenum. Here she was visited by many of the distinguished men of the time and kept the memory of her sons

alive by recounting their deeds and their hopes. Through her the cause for which Tiberius and Gaius (Caius) died lived after their death, and we may well believe that some of the men who carried on their reforms went out from this little circle about Cornelia."

Other phases of the politics of Rome in the second century before Christ have a special interest for us here. How old certain attitudes of mind and modes of expression in man's point of view with regard to woman's rights are, may very well be appreciated from a well-known speech of Porcius Cato which we owe to Livy. These may not be the exact words of the stern old Roman moralist but they probably represent about what he said, as Livy obtained his ideas from the older historical documents. It was one day not long after the second Punic War, that is about the end of the first quarter of the second century before Christ, that old Cato came indignant into the Senate Chamber, very much put out over the fact that in coming into the Senate House through the forum, he had to make his way through a crowd of women who were there soliciting votes in support of a bill that they wanted passed. (This bill was to correct certain legislation which placed rather heavy burdens of taxes on them because of the extent to which Roman finances had been reduced by the expenses of the war.) Cato resented particularly this effort of the women to create public sentiment

outside of their homes, instead of influencing those men with whom they were brought normally in contact in their households. He said:—

"'Romans! if every individual among us had made it a rule to maintain the prerogative and authority of a husband with respect to his own wife, we should have less trouble with the whole sex. It was not without painful emotions of shame that I just now made my way into the Forum through a crowd of women. Had I not been restrained by respect for the modesty and dignity of some individuals among them, I should have said to them: "What sort of practice is this, of running out into public, besetting the streets, and addressing other women's husbands? Could not each have made the same request to her husband at home? Are your blandishments more seductive in public than in private, and with other women's husbands than your own?"

"'Our ancestors thought it not proper that women should transact any, even private business, without a director. We, it seems, suffer them now to interfere in the management of state affairs. Will you give the reins to their untractable nature and their uncontrolled passions? This is the smallest of the injunctions laid on them by usage or the laws, all of which women bear with impatience; they long for liberty, or rather for license? What will they not attempt if they win this victory? The moment they have arrived to

an equality with you they will become your masters.' "

This incident that aroused Cato's wrath may well be placed beside another from the following century. It is rather interesting to realize that at least on one occasion when the Roman women were demanding their rights under the Second Triumvirate, their zeal was so great that they quite overstepped the bounds of custom in bringing their petition to the triumvirs. There is no doubt that the women were right in their petition and that it probably would not have been heard at all, or might have been neglected, only for their action. What is particularly interesting for us here, however, is that the activities of the English suffragettes with regard to the English parliament, as illustrated by their forcing their way into the presence of officials, are not modern, but are a repetition of this incident of Roman history. The Roman women were protesting against an edict requiring 1400 of the richest women to make a valuation of their property and to furnish for the expenses of the republic such an amount of it as might be called for by the triumvirs. Their representatives forced their way to the tribunal of the triumvirs in the forum,—a thing that was particularly forbidden by the laws and that no Roman citizen would have dared to do at that time. In anger the triumvirs ordered the lictors to force the women away from the tribunal. In the confusion that resulted the women resisted,

some of them were injured, and it was not until the crowd which had gathered out of curiosity protested against the proceeding because it involved the injury of women that the effort to subdue by force was stopped and then the officials postponed the consideration of the subject till the next day, when precautions doubtless were taken to prevent any such unseemly interruption.

Gradually, as the Roman domination spread, wealth flowed into Rome and the simple customs of the earlier republic gave way to the luxurious habits of the East and to the idle social life that always characterizes cities where great fortunes abound. The captured East took its captor captive in enervating luxury. It is probable that, considering the buying power of money, the fortunes of the Roman citizens who were wealthy were as great as those of our own day, and there were at least as many of them. The ways of making money at Rome were startlingly like those of our own time. Great fortunes came, first, from speculation in land values, as the city grew in a century from a town of 100,000 to one of nearly 2,000,000 inhabitants; secondly, by insurance and by rents from the housing of the poor who lived huddled together in tenement houses called *insulae* (islands) because they were required by law to have streets on all sides of them; thirdly, by speculating in stocks and bonds; fourthly, by cornering foodstuffs, for Italy was not fertile enough to grow all the grain required

and this was obtained down on the northern coast of Africa. Whenever crops were poor the price was put up and immense quantities were stored in large granaries in Africa, waiting for higher prices. A fifth rich source of great wealth was graft in politics, corruption of various kinds in civic life. The stories of this at the end of the republic are startlingly like those with which we are familiar at the present time.

Men made the large fortunes at Rome and to a great extent the women spent them. It became the custom for the wealthy to have a house in town, another in the country, a villa at the seashore, sometimes a house down on one of the Isles of Greece, sometimes a mansion in the East, though these were developments of imperial times. These houses were filled with *bric-à-brac* brought at great cost from Greece and Asia Minor—so that there was not much encouragement for Roman art, and with handsome stuffs, hangings, rugs, tapestries from the East and jewels and expensive decorations of all kinds. It must have been quite clear to many of the women that what they were thus spending lavishly had been made very questionably and that some of it beyond all doubt had been obtained by fraud or by political corruption that was gradually sapping the life of the state. That seems to have made no difference, however, to the general run of Roman women, for they were engaged in the all-absorbing social competition

of the city, in which each tried to make a greater display than her friends. They were practically all occupied in seeing and being seen as much as possible and just as little as possible in doing anything worth while. There are phases of this story of the women of Rome of the later republican days that anticipate very strikingly parallel sets of incidents in the life around us at the present time. Peaceful, happy, noble living in the midst of domestic joys had gone out and strenuous, fussy, ostentatious existence, with dubious pleasures and worse, had come in. Mrs. Putnam says of this phase of Roman life:—

"The unfortunate reaction upon the Romans of their achievements is a commonplace of history. The best of them were reduced in numbers by centuries of constant warfare, and the survivors were assailed by those bacilli of civilization which always ravage a fresh race with a virulence unknown among the peoples that have become adapted to them. And the conditions that proved in the long run fatal to the noble Roman worked rapidly and perniciously upon his wife. With the introduction of slavery, what occupation the lady had was gone. She resigned the care of her house, the care of her children, the care of her person to Greek slaves who understood all these matters a great deal better than she did. The time that was left on her hands she filled with the pseudo-activities of the *nouveau riche.* Through her efforts, 'society' was organized for

the first time in Europe. What people wore, what they ate and drank, what sort of furniture they had, and how much their horses cost, were questions that then for the first time acquired the importance they have ever since retained."

One very interesting result of Roman decadence in the midst of the great fortunes and the luxury that came to Rome is not often properly appreciated, at least by the casual student of history. With the development of luxury, as every one knows, divorces became very common and were indulged in by practically all classes. Even the stern Cato divorced his wife. She then married the wealthy Hortensius and after his death remarried Cato, bringing a substantial addition to the pecuniary resources of the household. Three and four divorces were not unusual for either men or women, and the marriage tie became very loose. Children of course were not desired under these circumstances, and the birth-rate among the old Roman families and those possessed of wealth sank to the vanishing-point. Rome had its attractions as a great city, however, and the provincials who came in supplied the places of the unborn Roman children and supplanted those of whom luxury had made nonentities, both for themselves and the race, and so while Rome still had literature and art these came almost entirely from the non-Roman inhabitants of the city. How true this is with regard to most of our modern large cities most of us know. It

is the country boy who comes in and makes a success of whatever he undertakes. Very rarely does the descendant of an old city family succeed in anything requiring special intellectual power, though of course he may manage an estate or continue an established business for a time, or perhaps even conventionally conduct his father's profession. All this is readily exemplified at Rome.

The sterility of Rome itself in men who made great accomplishment is well illustrated by a list of the great writers at Rome during the century before and after the fall of the republic. All of the writers whose names are most familiar to us were born outside of Rome itself. Until attention is particularly called to this fact it is difficult to understand how completely this is true. Cicero was born at Arpinum, Virgil was born at Mantua, Horace was born out on the Sabine farm, Persius was born up in the hill country, probably Juvenal also; Terence was born in Africa, the Plinys were born down on the seacoast, Livy was born at Padua, the Senecas were born in Spain, so were Quintilian and Lucan and Martial. Indeed all the Silver Age of Roman Literature is Spanish in origin. Provincials from Spain had come to Rome with the freshness of genius and virility of style that made them leaders in the city. Only Julius Cæsar of the men whom we think of as great writers at Rome was born in the city itself. When the Empire settled down

to peace and prosperity towards the end of the first century after Christ, it was under the Spanish Cæsars. From Trajan to Marcus Aurelius Rome had probably the happiest years of her existence, and humanity perhaps the most peaceful period we know of. Great city life had accomplished the usual sterilization of the native population, but attracted genius from a distance and so adopted the incomers that the dearth of native power of accomplishment was concealed for a time.

With the frequency of divorce there came also almost inevitably a great scarcity of children in the Roman families. Soon the old Roman families began to die out and the new citizens of Rome, those who had come in from the country districts and had made a success in life, took their places. Before long they learned the lessons of Roman society, divorce and small families continued to exercise their influence, and the birth-rate was very much reduced. With the high death-rate of those times it did not take long to wipe out a family in which at most one or two children were born. The foreigners who came into Rome to do the heavy work, building the great aqueducts, erecting the magnificent monuments, the great buildings of the city, making the Roman roads, were slaves, but it was possible for a slave to obtain his freedom and after a time legal regulations were made to permit such freedmen to become Roman citizens. At the end

of the republic the slaves very largely exceeded the number of the free population of the city, and during the first century after Christ there were probably double as many slaves as free in Rome.*

We may for a moment profitably look forward, to see what occurred in Rome during succeeding centuries. With the disappearance of the Roman families these foreigners gradually came to take their places. This proved the beginning of the end of Rome's greatness. What happened subsequently was clearly foreshadowed. We have heard much of the invasion of the barbarians, but it must not be forgotten that no Roman

* The population of Rome has been the subject of much speculation and we cannot be absolutely sure of it. Friedlaender probably supplies the best data for the number of inhabitants under Augustus, and Mommsen follows him. According to this computation there were probably about 1,600,000 in the city at the time of Christ. These were divided into the following classes: about 320,000 Roman citizens; about 10,000 senators and knights; about 20,000 in the garrison; and, surprisingly enough, only about 300,000 free women and children. There were probably nearly 100,000 strangers in the city. The slaves amounted to the large number of 900,000—more than half the population. These were workers of all classes, and their large number gives one ready means of realizing how important the class of free men became, as in the course of time slaves were manumitted and became *sui juris*. Many of these slaves, of course, were intelligent, well educated, and, in general, they represent the working classes of our time, but not merely the handworkers, for the pedagogues as we know from Horace, and the secretaries we know from Cicero, and even many of the artists and especially the decorators and the finer handicraftsmen were, at least at the beginnings of their careers, slaves. Many of them had been born in Rome, though usually of families that had been brought into the city; many of them came from distant provinces, and after a time they and their descendants came to supply the places of the Roman citizens.

army was ever beaten by a barbarian army. When Totila captured Rome he was the hireling leader of a Roman army of hirelings who, dissatisfied with their wages, captured the city and looted it in order to recompense themselves for previous services. They were intent on securing what they thought the State should have paid them. Totila was really the successful leader of a strike in the army in the olden time.

Gradually, however, with the disappearance of the Romans a very curious state of affairs developed, especially in the cities of the Empire some distance from Rome. It was not unusual to find that a Roman city, or a town with a Roman name that had been founded as a Roman colony and was governed by Roman laws and had Roman courts and Roman customs, yet had no Romans in the town. They had disappeared in the "race suicide" of that time and were replaced by the sons and daughters of the barbarians whom they had brought in to do their manual labor or to serve in the army, and who, as slaves, became gradually more cultured and civilized until they replaced their Roman masters. There is an interesting parallel with our own time in this, all the more interesting to us on this occasion because the women had much to do with the state of affairs that developed.

The barbarians who came in to replace the Romans soon learned the vices of civilization. It is always true that when uneducated people come

in contact with a highly developed people they are much more likely to take their vices than their good qualities. Indeed there is but little chance of their developing the good qualities of civilization except by slow degrees, and in the meantime the vices carry them into excesses that shorten life and preclude all possibility of anything like real mental development. This is contrary to what might be expected on first thought, but it is exemplified by many modern experiences. It might be expected that the Indians dwelling on the American continent when the whites began to come would gradually acquire all the better qualities and become civilized and live happier lives as a consequence of the contiguity of the Europeans and their descendants. This did not prove to be the case, however, and except where special attention was paid to them and successive generations of them carefully nurtured apart from so-called European civilization, they learned the white man's vices, caught his diseases to which they were little resistant because of unaccustomedness, and gradually disappeared. What happened to our American Indians illustrates very well certain phases of later Roman history in the imperial days and makes it clear why the barbarians who had come in had to be gradually lifted up, generation after generation, and how long and difficult was the task of Christianity in this regard.

Meanwhile it will be interesting to see what

the Roman matron of the republic with leisure on her hands, without children or with many servants to care for the one or two she had, did with her time. There might be the temptation to think that Americans, owing to special conditions in their own country and the analogy between some of those conditions and circumstances at Rome, were prone to make out the similarities between the women of the Roman republic and our own as greater than they really were. It is not Americans who have emphasized the striking parallel most but those who know both countries well, or who are telling Rome's story as they have learned it. The Italian historian Ferrero had much to say to us on the subject during his lecture course here. W. Warde Fowler, the distinguished English writer on ancient social life, says in his "Social Life at Rome": *

"Ever since the incoming of wealth and of Greek education, of theatres and amusements and all of the pleasant out-of-door life of the city, what was now coming to be called *cultus* had occupied the minds and affected the habits of Roman ladies as well as men. Unfortunately it was seldom that it was found compatible with the old Roman ideal of the *mater-familias* and her duties. The invasion of new manners was too sudden, as was the corresponding invasion of wealth; such a lady as Cornelia, the famous mother of the Gracchi, who knew what education

* New York, 1909.

really meant, who had learned men about her and could write well herself and yet could combine with these qualities the careful discharge of the duties of wife and mother,—such ladies must have been rare, and in Cicero's time hardly to be found. More and more the notion gained ground that a clever woman who wished to make a figure in society, to be the centre of her own *monde,* could not well realize her ambition simply as a married woman. She would probably marry, play fast and loose with the married state, neglect her children if she had any, and after one or two divorces, die or disappear. So powerfully did this idea of the incompatibility of culture and wifehood gain possession of the Roman mind in the last century B.C., that Augustus found his struggle with it the most difficult task he had to face; in vain he exiled Ovid for publishing a book of poems in which married women are most frankly and explicitly left out of account, while all that is attractive in the other sex to a man of taste and education is assumed to be found only among those who have, so far at least, eschewed the duties and burdens of married life. The *culta puella* and the *cultus puer* of Ovid's fascinating yet repulsive poem are the products of a society which looks on pleasure, not reason or duty, as the main end of life,—not indeed pleasure simply of the grosser type, but the gratification of one's own wish for enjoyment and excitement, without a thought of the misery all around, or any sense

of the self-respect that comes of active well-doing."

Mrs. Putnam has a very interesting account of the educational and cultural activities of the Roman matrons in the midst of wealth and luxury at the end of the republic, which I venture to quote, all the more readily because, coming from an American woman who is herself a distinguished educator, it will not be thought that a mere man is trying to make little of the literary and artistic accomplishment of the Roman women. This seems all the more advisable because the picture presented has been thought by some to anticipate modern conditions in these matters rather closely. In spite of much devotion to music, much reading of poetry, much admiration of art, the productivity of the women of the modern time has not been very marked and has usually resulted in materials that do not seem likely to prove of enduring value, as a rule. Mrs. Putnam said:

"A woman of fashion, we are told, reckoned it among her ornaments if it were said of her that she was well read and a thinker, and that she wrote lyrics almost worthy of Sappho. She too must have her hired escort of teachers, and listen to them now and then, at table or while she was having her hair dressed,—at other times she was too busy. And often while the philosopher was discussing high ethical themes her maid would come in with a love-letter, and the argument must wait till it was answered.

"Nothing very important in the way of production resulted from all the lady's literary activity. The verses of Sulpicia, if Sulpicia's they be, are the sole surviving evidence of creative effort among her kind and, respectable as they are, they need not disturb Sappho's repose. It was indirectly that the Roman lady affected literature, since kinds began to be produced to her special taste; for it is hardly an accident that the *vers de société* should expand, and the novel originate, in periods when for the first time women were a large element in the reading public."

The mention of the novel recalls the fact that it was at this time, when luxury had crept in among the Romans and the simplicities of the earlier life had given place to the idling and ease of the later days, that the novel, for the first time in history so far as I know, reached one of those phases which have recurred under similar circumstances a number of times since. When home life is luxurious and the women themselves are not much given to work and have no appointed tasks that occupy them definitely every day, and above all either have no children or relegate the care of them to servants, novels become popular and then after a time have to be lifted out of monotony by indulgence in sex subjects. The readers' palates evidently become tired of the simple story of ordinary events and the spice of sex must stimulate their jaded interest. At

Rome the novels written for women particularly possess this fault. This was also true in the time of the Renaissance when once more women became much occupied with literature and stories were particularly written for them. In France it was as a woman of the Renaissance that Margaret of Navarre wrote her "Heptameron," the principal readers of which were women. In our time when woman readers—and writers—multiplied again, this same thing has become prominent. I forbear to make any reflections on it, for I am not sure that I know exactly the reason for these recurring incidents.

With regard to collections of expensive foreign curiosities, Mrs. Putnam has an interesting passage:—

"The Greeks, who, to be sure, had nothing in their dwellings that was not beautiful, had still supposed that great works of art were for public places. With the Romans began the private collection of *chefs-d'œuvre* in its most snobbish aspect. The parts played by the sexes in this enterprise sometimes showed the same division of labor that prevails very largely in a certain great nation of our own day that shall be nameless: the husband paid for the best art that money could buy, and the wife learned to talk about it and entertain the artist. It is true that the Roman lady also began to improve her mind. She studied Greek, and hired Greek masters to teach her history and philosophy. Ladies flocked to

hear lectures on all sorts of subjects, originating the odd connection between scholarship and fashion which still persists."

As with regard to many other social problems, the Roman satirists supply us with interesting hints with regard to the differing attitude of the men and women of the time towards culture that serve to show how old the new is in human nature. As has been said, the men earned the money and the women spent it and accordingly had much leisure to devote themselves to details of culture, knew more about the niceties of speech and the rules of grammar than their husbands. Occasionally it would seem that a husband at Rome, living the strenuous life of the city, neglected his syntax quite as one may do under similar circumstances now, though he may be a successful provider of all that is needed for household expenses. Sometimes apparently the Roman women under these circumstances, very different from ours, were so appallingly lacking in tact as to venture to make corrections of their husband's or his friend's mode of speech. Almost needless to say this did not conduce to the harmony of the household. After all it is the little things that count for most very often in domestic felicity. Juvenal did not hesitate then to stigmatize such tactlessness properly in one of his satires.

"I hate the woman [he says] who is always turning back to the grammatical rules of Palæmon and consulting them; the feminine student

of old literature who recalls verses unknown to me and corrects the words of an unpolished friend which even a man would not observe. Let a husband be allowed to make a solecism in peace!"

As their interest in household duties diminished and the increase in the number of servants took more and more of their occupations away from them, women began to be interested in things outside of the household and above all in political affairs. They did not cease to be women for all their interest in politics, and used feminine fascinations to help their cause or that of their husbands. This did not always lead to the best results and the women could not always be absolutely sure of themselves, but the occupation was novel and attractive and many women took it up. Example played a large rôle in the matter and it became the fashion to take up some phase of political agitation or to advocate some cause, though usually at Rome advocacy took the form of advocating some particular man's movement.

As Mrs. Putnam sums it up:—

"The Roman lady had in fact discovered the smokeless powder that put her on a somewhat less unequal military footing with the enemy. Social changes in Rome had brought her from the privacy of her own house into the world of society. She found herself at the head of a great establishment, with town-house and country house, with a round of magnificent entertainments to offer and to receive, and with more money to

spend than Europe had ever seen collected before, or would see again for many centuries. Supposing her to be singly devoted to her husband, she found that she could be of immense assistance to his career. Often, too, she found that she must compete with other women for his admiration. An attractive *demi-monde,* chiefly Greek, had become an institution in Rome. It behooved a wife to be as charming and intelligent as the ladies without the pale. The art of fascination once learned, it was difficult not to keep it in practice at the expense of the first comer.

"And when a woman had discovered that she counted for something in her husband's career, she not unnaturally aspired to a career of her own. Seneca expressed succinctly the dilemma in which the Roman found himself: 'It is hard,' said he, 'to keep a wife whom every one admires; and if no one admires her it is hard to have to live with her yourself.'"

Some of the women whose names have come to us as influential in politics at the end of the republic are not those that are held in honor. Sempronia, of whom Sallust, the Roman historian, said that she danced entirely too well to be virtuous, exercised wide influence in politics of a kind that was not likely to benefit ultimately the Roman people. Fulvia, whose influence for evil can scarcely be exaggerated, and Clodia, whose "burning eyes" Cicero talks of and whose house on the Palatine and her villa at the sea-

shore drew together many of the foremost men of the time, are typical examples of the leading spirits among the women. Unfortunately we have few formal records of the lives and influence of these women. What has come down to us is largely drawn from what is said of them by men who had learned to dislike if not actually hate them after having sometimes been on terms of familiar friendship with them. There can be no doubt at all, however, that women like Clodia hastened the end of the Republic and the coming of that confusion out of which the Empire was the only means of escape.

Some of these women became very expert politicians. Their moral characters suffered in the struggle for power but success became the one question of the hour. Servilia, for example, was undoubtedly one of the strongest influences in the political life of Rome for a full quarter of a century, down to about 50 B.C. She was the wife of Marcus Junius Brutus, the democratic leader, and the mother of Brutus, who with Cassius led the conspirators against Julius Cæsar. There has always been some question whether the younger Brutus was not Cæsar's son and that this was the reason why Cæsar uttered the words "thou too, Brutus," when he recognized him among the conspirators and then folded his cloak about him and refused longer to resist. Cassius and the triumvir Lepidus were sons-in-law of Servilia. After having been prominent in demo-

cratic politics, Servilia later came out openly as one of the prime movers in the senatorial party. Her interests were always personal, apparently, rather than truly political. There was always "a man in the case" whose interest she was trying to further in some way and Cicero became exasperated when Brutus and Cassius turned to her frequently for advice, because he felt that her advice was always dictated by a desire to further the interests of her son rather than those of the Republican party or of the interests of Rome. She was so confident of her power in politics that on one occasion she made a definite promise to bring the senate to repeal one of its decrees which was obnoxious to some of those closest to her in politics. Abbott, in his "Society and Politics in Ancient Rome," in the chapter on Women and Public Affairs, sums up the situation very interestingly:

"Social and political ambition, therefore, could be gratified by the attainment of one object only, political success, and to this end men and women devoted their most earnest efforts. From this union of society and politics each took its color in large measure, and by it the character of the Roman women during the last years of the republic was profoundly influenced. What the effect of such an alliance is upon politics can be appreciated from a glance at English conditions to-day, or from a study of certain periods of French history in which women have played an

important rôle behind the scenes in public life. Where such conditions exist, the policy of the government is determined by the salon as well as by the parliament, and political preferment comes largely through social influence. Cæsar's engaging personality, for instance, his dashing manner, and his chivalrous bearing counted largely in his political success. A Marius or a Cincinnatus would have had small chance of winning the prizes in public life. Intrigue is likely to play an important part under such conditions, while revenge and jealousy, personal likes and dislikes, will color political aims and methods. A cursory reading of Roman history for the last two decades of the republic shows the presence of these characteristics in it. They come out clearly, for example, in the brief analysis which has been made of Clodia's share in the politics of her time."

There were good women at Rome during these stormy times whose influence was deeply felt for the benefit of the Roman republic and for the preservation of the liberties of the people. Here, too, it is interesting to realize, however, how much personal motives rather than public duty influenced the women. Two of them deserve to be mentioned. One is Julia, the daughter of Cæsar and the wife of Pompey. It is very clear that her influence meant much for putting off civil war between her husband and her father, and that the Roman people came to have great faith in her power to preserve their rights and

privileges for them and maintain the old order of things. Unfortunately, after a brief life she died, though not until the people had come to recognize all of her influence for good. After her death Pompey, who had been deeply in love with her, proposed to erect a magnificent mausoleum to her memory on his Alban estate in which her body should repose in honor, but the Roman citizens demanded that she should be buried in the Campus Martius with those who had accomplished good for the Roman republic. Accordingly she had the exceptional privilege, for a woman, of a public funeral and of burial with the heroes whom the Romans loved to honor.

The other distinguished woman whose influence for good can scarcely be exaggerated belonged to the same family as Julia, being a sister of Augustus, who was the grandnephew of Cæsar. After the death of Julia, Cæsar, who recognized the beneficent influence of his daughter over Pompey, offered Octavia his grandniece as Pompey's next wife. The discrepancy in age, however, seems to have deterred Pompey and it is as the wife of Antony that Octavia is known in history. As Julia had been the medium of peace and the hindrance of civil war between Pompey and Cæsar, so now Octavia became the bulwark against the civil war that might so easily, at any moment, be lighted up between her brother Octavius and her husband Antony. This involved the bearing of no little contumely and the

refusal to be hurt or at least to be forced into action by contemptuous remarks. When Antony went to Egypt the story of his relations to Cleopatra naturally reached Rome and became the subject of common gossip. Augustus, then known as Octavius, ordered that his sister should leave Antony's house to come and dwell with him. She felt that that surely would precipitate civil war, and so she pleaded successfully to be allowed to stay in Antony's house until in some formal way he should declare her no longer his wife.

In spite of all that it must have cost her in personal feeling when each day was bringing fresh rumors of Antony's entanglement with Cleopatra, and when these rumors became the common subject of conversation at Rome, and Octavia must have felt the contemptuous looks and at least heard of the remarks passed out of her presence, she continued with Roman dignity to fulfil her duty as wife and sister as she saw it and succeeded in putting off for a considerable time the inevitable rupture between Antony and her brother. This whole situation has been generally misunderstood, but there can be no doubt that Octavia's part in it was that of a thoroughly noble woman whose sense of duty, and the feeling that her personal sufferings meant nothing compared to the sparing of the horrors of civil war, led her to occupy for a considerable period when retreat might have been easy a dubious position,

in which misunderstanding, calumny, contempt and all that is most difficult for human nature to bear were assailing her. Almost needless to say, the Roman people thought much of her and she came to replace in their affection her aunt Julia, who had probably been one of the most thoroughly liked of her generation.

To understand Octavia's place and career in the Rome of her time the newer social history of Rome needs to be understood. It differs considerably from our previous notions. It is usually supposed that Cleopatra's interference with Roman affairs was nothing more than a vulgar sexual intrigue with Antony. It is pointed out that she had tried the same game with somewhat less success on Julius Cæsar, and the next Roman general was a fair mark for her ambition. The Italian historian Ferrero's analysis of the situation, however, shows us that very probably on Cleopatra's part there was very little if any of sexuality and a great deal of political astuteness. In his "Society and Politics in Ancient Rome," * Frank Frost Abbott says: "She [Cleopatra] hoped, by marrying Antony, to save Egypt from the common fate of the other Mediterranean peoples, the fate of servitude to Rome. She had tried to attain her end through Cæsar, but, failing in her plan with him, sought to carry it out through Antony. It was a desperate political game played by two women for the favor of one man. Both

* Scribner's, New York, 1909.

were beautiful, brilliant and accomplished women of the world. Both had shown themselves to be skilful women of affairs: Cleopatra, in the management of Egyptian interests and in the farsightedness of her policy; Octavia, in securing troops and supplies for her husband's Armenian campaign, and in cleverly arranging a basis for a compromise between Antony and Octavianus when all others had failed. The stakes for which Cleopatra played were the secure establishment of her dynasty, the independence of Egypt, and the upbuilding of a great oriental monarchy in Egypt and Asia. Octavia played to win the eastern revenues, to save Italy from financial ruin, to protect the empire from a possible division into two parts, while civil war trembled in the balance. The people of Rome watched the duel between these two women with intense interest. Not only the noble character of Octavia and the indignities put on her appealed to their sympathies but they felt, as they had in the case of Julia, that peace, prosperity and the integrity of the empire were staked upon her success in defeating the wiles of Cleopatra. She failed. Yielding to the entreaties of Cleopatra, in 32 B.C., Antony sent a message to Rome divorcing Octavia, and war followed."

This brings us down to the time when the Roman Republic was gradually merged into the Empire. So gradually, indeed, that apparently the Roman people did not realize for a consider-

able period after the establishment of the Empire that their government had changed and their republic been dissolved. After this the parallel between the two great republics ceases, though there are some who think it not impossible that in the years to come even that further parallel with the Empire at Rome may become a fact. Possibly the story of the women at Rome may be of interest as showing what happened through their influence in that other great republic before our own. Undoubtedly there are many startling similarities between the historical developments of feminine influence at Rome and in the United States. History is said to be valuable mainly as a teaching by example. The lessons of these anticipations at Rome of what has come and is possibly coming in our own country may be helpful in enabling us to avoid the worst evils and recognize just what the significance of many tendencies in our modern life is. No conclusions can be drawn, but there are hints that may help for further study and above all make clear that what is happening in our time is not new, but represents what has occurred in previous stages of human existence whenever social conditions resembled our own.

INDEX

A

Abbeys, ruined, 273
Abbott, Frank Frost, 16, 419
Abélard, 29
Aberdeen University, 303
Abulcassis, 112
Acidinus, 17
Adams, John and Samuel, 170, 180
Aëtius, 110
Afeared, 142
Africanus the Younger, 396
After, 145
Again, 148
Against, 150
Agassiz, 365
Ages, Bright, 259; Dark, 259; Middle, 259
Agrarian law, 396
Agriculture, monks in, 268
Agriculture, scientific, 268
Albertus, 305
Alexander of Hales, 306
Alfred, 260
Ali Abbas, 112
Alkibiades, 36
Alma Mater Studiorum, 324
American Desert, 349
Ampère, 309
Anæsthesia, 83
Anatomy of plants, 313
Ancon sheep, 365
Annals of Clonmacnois, 124
Antidote, 61
Antigonish, 299
Antiquity, pagan, 260
Antimony, Triumphal Chariot of, 71
Antisepsis, 83; anticipated, 326; insect, 303
Antony, 421
Ants, 201
Aquinas, 305
Arabs and Salerno, 331
Aranzi, 393
Architecture, Spanish and American, 284
Arculanus, 116
Ardern, John, 249
Areiopagos, 36
Aristarchus, antidote of, 61
Aristophanes, 9, 34, 36
Aristotle, 305
Arsenic for tuberculosis, 58
Art, appreciation of, 291
Art, Roman, 402
Art, public, 284
Artemias of Schmankewitch, 363
Artifex dentium, 101
Atomic theory, 352
Atticus, 16
Augustine, St., 255
Augustus, dyarchy of, 397
Autographs, American, 243
Avicenna, 112

B

Babies, rights of, 40
Bacon, Lord, 376
Baglivi, 315
Balcony, 141
Baldness, remedy for, 59
Bartholow, 60
Bartlett, 149
Basil, St., 261
Basil Valentine, 71
Basilicas, 261
Bassi, Laura, 312
Bateson, 366
Bear, white, 371
Beaulieu, 274
Beccaria, 312
Bees, 201
Beeswax, 203
Benedict, St., 260, 263

Bench-writing, 239
Berengar of Carpi, 325
Berkley, 127
Bertrucci, 325
Bibulus, 17
Big business, 229
Billroth, 310
Biot, 310
Birth-rate, Roman, 404
Bodies, Malpighian, 313
Boerhaave, 313, 319
Bologna, feminine law students at, 28
Bologna, women students at, 28
Boniface, 260
Borelli, 315
Botticelli, 255
Bounties, double, 170
Bourne, 284
Bracton's digest, 306
Bramante, 289
Bridge-work, Etruscan, 95
Bright Ages, 110, 259
Brogue, Irish, 153
Browne, Sir Thos., 186
Brücke, 310
Brunetière, 367
Bruttius, 17
"Brutus, Thou too," 418
Bryce, Ambassador, 367
Buffon, 310
Burke, 160
Burroughs, John, 374
Butler, Nicholas Murray, 191

C

Caedmon, 293
Cæsalpino, 323
Cæsarea, 261
Cæsars, palaces of the, 85
Caius, Dr. John, 251, 321
Caius, Gracchus, 396
Campus Martius, 421
Cantor, 303, 325
Carrolls, 180
Carthage, 98
Cassius, 418
Catholics in education, 336
Cato, Porcius, 398
Cato's divorce, 404
Catullus, 107
Celsus, 102
Cesnola's Cyprus, 91
Chance to rise, 275
Charity, 220
Charity, law of, 200; principle of, 219
Charlatans, 54
Charlemagne, 261
"Charley-horse," 349
Charter of Hungary, the Golden, 306
Chauvinism, lack of, 323
Cheapside, 274
Chicken-heartedness, 215
Children, cutting teeth, 111
Children, discussion of the rights of, 39
Cholera, epidemics of, 238
Church and progress, 257
Church and prosperity, 283
Church and science, 309
Church holydays, 286
Church, patron of the sciences, 292
Cicero, young and wine, 18
Cicero, 405; letters, 15
Cincinnatus, 420
Civilization, vices of, 408
Classes, educated, 232
Clinical or bedside teaching, 106
Clodia, 417
Clouds, the, 9
Cockroach, Asiatic, 194
Colds, 349
Colet, Dean, 325
College men in politics, 229
Colonization, Catholic and Protestant, 283
Coloration, protective, 372
Colosseum, 289
Columbus, 323, 324
Columbus' egg, 344
Community, 246
Concord, 162
Confiscation, 229
Conservation of energy, 351
Constantine the African, 330
Contrary, 140
Cope, 365, 369
Copernicus, 324, 376
Coriolanus, 98
Cornelia, 392

Corrupt and contented, 181
Corruption fund for their children, 183
Corruption, municipal, 181
Corruption, political, 402
Cough medicines, 60
Court, Children's, 282
Court, domestic relations, 282
Cram, Ralph Adams, 273
Creighton University, 225
Cromwell, 391
Crown work, ancient, 100
Crozier, life under the, 268
Culta puella, 411
Culture, 410
Cultus puer, 411
Cure-alls, 63
Cusanus, 325
Cuvier, 310

D

Dalton, 375
Daly, Augustine, 234
Daly, Judge, 234
Dark Ages, 109, 259
Darwinism, 362
Darwinism a dogma, 190
Darwinism in the social sciences, 370
Darwinism, System of, 188
"Darwinism To-day," 363
Davis, President Jefferson, 241
Dawson, Sir Wm., 365
Death-rate, high, 406
Declaration of Independence, 243
Demi-monde, 417
Dentatores, 113
Dentistry, Etruscan, 96
Dentistry, how old the new, 79
Dentium, artifex medicus, 101
Derby, 127
Descent theory, 190
Desiderius, Abbot, 330
Diathesis, uric acid, 348
Dietetics, 328
Discipline and interest, 359
Dissection, Leonardo and, 322; Michel Angelo and, 322; Raphael and, 322
Divine plan, 219
Donatus, 300
Don Quixote, 244
Door, 137
Dramatist, nun of the tenth century, 30
Drouth, 146
Druggists, 67
Drugs, impurity of, 67; ready-made, 68
Du Bois-Reymond, 310
Dumas, J. B., 310
Duns Scotus, 306
Duties and rights, 39
Dwight, Professor, 188, 362

E

Earth, centre of the, 345; cooling of the, 350
Ebers Papyrus, 47, 51, 87
Edgeworth, Maria, 48
Editorials, medical, 4
Education, best for boy, 234; feminine, 26; female, 38; ideal popular, 25; medical, 307; our place in, 377; phases of feminine, 382; sum of, 25
Egyptian dentistry, 86
Elimination of the weaklings, 195
Elizabethan speech, a survival of, 123
Ellis, 132
Emmanuel, 261
Emmet, Dr. Thos. Addis, 237, 391
Energy, radio-active, 346
England, Catholic, 285; Merrie, 285
Epulis, 111
Equator, a menagerie lion, 355
Equutius, Abbot, 269
Erechtheum, 288
Erysipelas, 328
Etruria, 93
Etruscans, 93, 387
Eustachius, 321
Evolution, 42; and adaptation, 189; automatic, 227, creative, 366; theory of, 362; threshold of, 227
Examination, mill, 358; ques-

tions, 354; ridden, 356; tips on, 358
Existence, struggle for, 93, 370

F

Fabricius da Aquapendente, 315
Facilities and faculties, 357
Factors, biological, 220
Facts not truths, 342
Family life, 282
Farming, scientific, 271
Fashion, a woman of, 412
Father problem in education, 14
Fault, 139
Favorite prescriptions, Galens, 55
Ferrero, 383, 423
Finsen, 328
Fishes, colored, 372
Fiske, John, 110, 260
Fleay, 132
Fool and reading, 343
Forceps, 103, 117, 327
Ford, Paul Leicester, 173
Fore-anent, 143
Forestry, successful, 270
Formaldehydes, 206
Forninst, 143
Forum Judicum, 306
Foster, Professor, 313
Fournier, 230
Fowler, W. Warde, 410
Frankenstein of examinations, 358
Franklin, 180, 347
Fraternity, 220
Frederick II, Emperor, 307, 330
"French Dentist," the, 119
Friedländer, 68; "Roman Life and Manners," 52
Fruit, unripe, 214
Fulvia, 417
Fumigation, 49

G

Gaius Gracchus, 397
Galen, 52, 104
Galen's prescriptions, 33
Galileo, 318
Galvani, 312
Geology, founder of, 317; text-book in, 317
Giovanni of Arcoli, 116
Gladstone, 243
Gladstone's Home Rule Bill, 246
"Glass arm," 349
Goethe on work, 360
Gold Coast, 16
Gold and copper, 353
Gold on teeth, 97
Gold, salts of, 65
Goldsmith, 139, 356
Goodell, Dr. Henry, 268
Gothic cathedrals, 288; sculpture, 288
Gracchi, mother of the, 392
Graft, 178
Grasses, 212
Grass seeds, 213
Graves' Energy (Gray's "Elegy"), 356
Greece, women of, 383
Gregorian Chant, 294
Guerini, 94
Guild of the Holy Cross, 294
Guilds of the Middle Ages, 280
Gulf Stream, 346
Gum for aching teeth, 104
Gums, application to, 115
Gurlt, 82, 117, 230, 303, 331
Guy de Chauliac, 82, 113, 325

H

Hale, Rev. Edward Everett, 387
Haller, 313
Hannibal, 358
Hardness in education, 8
Harrison, Mr. Frederic, 357
Harvard, 285
Harvey, 315
Hauptmann, 257
Health resorts, 262
Heart, 133
Héloïse, 29
Henry VIII, 294
"Heptameron," 414
Hibben, Pres., 33
Hildegarde, 31
Hingston, Sir Wm., 233, 240
His, 310
Hobbies, 244

Hoffman, 313
Holiday, 286
Homer, 91
Horace, 405
Horehound, honey and wine, 60
Hortensius, 404
Hospitals, 261; beautiful, 329
House of Lords, 277
Hughes, Justice, 237
Humanity, welfare of, 249
Humboldt, 285
Huxley, 303
Hyde, Mr. Douglas, 124
Hydrotherapy, 328
Hygiene, insect, 204
Hyrtl, 310
Hysterias, 50

I

Inheritance, medieval, 279
Insect antisepsis, 205; hygiene, 204
Insulæ, 401
Insurance, 280
Interest and discipline, 359
Iodine, 63
Ireland under English rule, 246
Irish brogue, 123
Irish-English, 123
Island off the Massachusetts coast, 157
Isokrates, 31, 36
Italy and post-graduates, 311

J

James, Prof. Wm., 258, 265
Japanese Current, 346
Jerome, St., 202
"Jests, The Hundred Merry," 74
Jewels, Cornelia's, 393
John De Vigo, 117
John of Ardern, 321
Jordan, David Starr, 363
Josh Billings, 302, 342
Joy of life, 287
Julia, 420
Julius Cæsar, 397, 418
Juvenal, 405, 415

K

Kellogg, Prof. Vernon, 190, 362
Kelly, S, 160
Kelvin, Lord, 350
Kennedy-Emmet collection, 245
Kennedy, Mr., 244
Kennys, 160
Kircher, Father, 318
Knockt, 151
Kölliker, 310

L

Laboratory, modern, 314
Labor, dignity of, 264; manual, 263; slave, 263
Laennec, 309
Lamarck, 309
Lancisi, 312
Land, irrigation of, 270; reclamation of, 270
Lanfranc, 325
Latium, 387
Law, biogenetic, 190; pure drug, 330
Laws of the Twelve Tables, 97
Leapt, 150
Lecture at Rome, 414
Lecture habit, 343
Leeuwenhoek, 119
Lenox Library, 244
Leo XIII, 243
Leonardo da Vinci, 322
Leper segregation, 328
Lepidus, 418
Leprosy, 207
Lexington minute men, 159
Leyden, 320
"Libellus de Dentibus," 118
Licenses to practice, 330
Liebig, 310
Lies and statistics, 342
Life, professional, 250; struggle for, 193, 217, 373
Lima, University of, 284
Linacre, 320, 324
Lincoln, 173
Links between species, 364
Links, missing, 364
Literature for women, 27
Literature of a generation, 376

Lithæmia, 348
Livy, 398, 405
Lodge, Senator Cabot, 161
Lords, House of, 277
Lords Spiritual, 278
Los Angeles, 272
Lounsbury, 125
Loyalists, 174
Lucas, 405

M

Maeterlinck, 343
Magna Charta, 306
Maistre, Count de, 334
"Makers of Medicine, Old-Time," 110
Making money and medicine, 248
Mankind, progress of, 302
Manners, good, 37
Marcus Aurelius, 406
Marcus Cicero, Jr., 17
Margaret of Navarre, 414
Marius, 420
Marshall, 247
Martial, 105, 405
Masses, half-educated, 189
"Mathematics, History of," 303
Maury, 346
McGinnis, Ralph Waldo Emerson, 164
Medical education, regulation of, 307
Medicine, popular, 187; history of, 303; preventive, 328
Memphis, 89
Mendel's laws, 366
Men higher up, 229
Mercury, 328
Messala, 17
Metallurgy, ancient, 90
Metals, transmutation of, 353
Mexico, men of, 284
Michel Angelo, 289, 322
Millet, 291; Madame, 292
Mimicry, myths, 372; protective, 372
Mind dissipation, 344
Mitscherlich, 375
Mivart, St. George, 365
Mommsen, 407
Monasticism, 264
Mondeville, 82, 325
Mondinus, 325
Monks, lazy, 263
Monte Cassino, 330
Monte Testaccio, 85
More, Hannah, 38
Morgagni, 312
Morgan, Thomas Hunt, 189
Morris, Robert, 180
Mortmain, 230
Moss from the skulls of criminals, 73
Mother problem, 7
"Much Ado About Nothing" (Noting), 138
Muck-raking, 247
Müller, Johann, 310
Müller, Max, 46
Mummy, 73
Murphys, 160
Museum of Pope Julius, 99
Mutual aid, ants and, 201; bees and, 201; cows and, 197; elephants and, 197; horses and, 197; plants and, 212; plants and animals and, 215; wasps and, 201
Mystery of human history, 80
Mysticism, 266
Myths, 372; making of, 375

N

Natural selection, negative, 220
Nature faking, 192
Needle, hypodermic, 202
Neither, 130
Nepos, Cornelius, 383
Network, Malpighian, 313
"New England, The Beginnings of," 260
Newman, Cardinal, 335
Nibelungen, 344
Nicaise, 82
Nothnagel, 230
Novels, 413

O

Obedience, American, 37
O'Briens, 162
Obscurantism, 332

Octavia, 420
O'Dwyer, Dr. Joseph, 239
Oefele, Prof. Von, 47
Officers, cashiered, 169
Old earth, 139
Onest, 150
Onion, 148
Ontogeny, 190
Opera, 295
Opium, dosage of, 328
Opotherapy, 59
Opportunity to rise, 274
Oratorio, 294
O'Reilly, John Boyle, 21, 157
Orthoepy, 134
Orthography, 134
Other-worldliness, 257, 266
Ough, 136
Over-crowding, 93
Ovid, 411

P

Pagel, 82
Palæmon, 415
Panacea, 62
Panathenaikos, 32
Pantheon, 288, 289
Paper, wood-pulp, 202
Papyrus, Ebers, 47
Paracelsus, 325
Paraguay cattle, 363
Parthenon, 288
Pasteur, 230, 248
Pastille, 55
Pathology, cellular, 187, 349; humoral, 187; popular, 187
Patriotism and peace, 180
Patriotism and selfishness, 166
Patriots then and now, 177
Paul of Ægina, 112
Pelicans, 327
Pensions, old age, 280
Pest, 318
Petronius, 108
Philosopher's stone, 352
Phœnicia, 89; story of, 90
Phylogeny, 190
Piccolomini, 323
Pilgrim Fathers, 386
Pilgrim mothers, 387
Pitcher, Molly, 345
Plants and inventions, 210
Plato, 37, 305; on feminine education, 27; on vocational training, 24
Pliny, 18, 68, 405
Plutarch, 397
Plutocrats among patients, 53
Poggendorf, 333
Pompey, 421
Pope, 131
Popular novels, 413
Porto Santo rabbit, 363
Potter, 60
Pour, 135
Poverty, 264; fear of, 266
Pre-Raphaelitic, 255
Prescription, the oldest, 46
Preservation of favored races, 216
Problem, mother in education, 7; servant, 22; sex, 19; the father, 14
Progress, 226, 302; evidence for, 6; in history, 176
Pronunciation, 133
Prosthesis, ancient, 95
Prosthetic apparatus, 101
Proverbs, 20
Pseudo-biology, 191
Ptah-Hotep, 20
Pueblos, 273
Puerbach, 325
Punishment, corporal, 40
Puschmann, 303
Putnam, Mrs., 403, 412, 416

Q

Quadrivium, 305
Quintilian, 405

R

Rabelais, 325
Race-suicide, 408
Radio-active substances, 351
Raleigh's cloak, 344
Ramon y Cajal, 230
Ramsay, Sir Wm., 352
Raphael, 322
Rawlinson, 90

Raymond Lully, 306
Recapitulation theory, 191
Receive, 129
Red light for smallpox, 328
Reed, Joseph, 169, 180
Reeve's Tale, 147
Regiomontanus, 325
Renan, 89
Republics, Two, 381
Rhazes, 112
Rheumatism, 348
Richet, Prof., 76
Rights, duties and, 37; of youth, 40; vested, 395
Rod ruling, 41
Roger Bacon, 302
Rogers, 141
Rome, 128; social life at, 410; society and politics in, 397; women of, 383
Rousseau, 4
Rules of the road, 21
Ruville, Prof. Von, 334

S

Sabine, 174
Sabines, Rape of the, 388
Sahara, 347
Saida, the ancient Sidon, 88
St. Peter's, 289
Salerno, Arabs and, 331; women physicians at, 28
Sallust, 417
Salol, 64
Saltation, 365
Salvarsan, 58
Sancho Panza, 242
San Diego, 272
San Gabriel, 272
Schools, technical, 26
Schwann, 349
Science, bankruptcy of, 367; Church and, 309; freedom of, 361; graduate study in, 309; medieval, 259; myths of, 372; physical, 301; popular, 187
Scribonius Largus, 109
Seed-pods, explosive, 212
Seeds, devices for scattering, 212
Selection, natural, 217; sexual, 374
Selfishness, refinement and, 232
Selling bishop, 335
Sempronia, 417
Seneca, 405, 417
Serapion, 112
Serra, Father Junipero, 272
Servilia, 418
Sex, 375; crimes of, 19
Sex problem, 19
Sexual selection, 374
Shall and will, 145
Shapespeare's puns, 131
Ship-fever, 237
Sidon, 89
Silver and lead, 353
Simon of Genoa, 338
Simpson, Sir James Y., 235
Sims, Dr. Marion, 238
Slaves, 263
Sleepy Hollow, 163
Society, 403
Sociology, biological, 373
Socrates, 9
Solecisms, a husband's, 415
Soul, 134
Spallanzani, 312
Spanish Cæsars, 406
Sparrow-grass, 148
Specialists, 336
Species, descent of, 364; forming, 363; origin of, 370
Spelling, 133
Statistics, 342; social injustice and, 232
Strabo, 91
Stratford, 294
Struggle for life, 195
Stork's bill, 118
Story, 247
Street, money making, 265
Strepsiades, 9
Substitution, 67
Suez Canal, 84
Suicide, race, 408
Sulpicia, 413
Sumter, Fort, 240
Sun cooling, 350
Surgeons, mercies of old, 326; qualities of, 249
Surgery, plastic, 238
Surgical specialties, 327
Swift, 139

Syme, 235
Synthesis, premature, 361

T

Tartar, 114
Teaching, discredited, 377
Teeth, extraction of, 115; false, 106; gold and Roman laws, 97
Teleologists, 366
Teleology, 220; exaggeration of, 371
Tenements, Roman, 401
Tennyson, 136
Terence, 405
Tooth-powders, 106
Thebes, 89
Theories, evolutionary, 368
Theory, Ptolemaic, 376
Therapeutics, historic, 76
"Thirteenth Greatest of Centuries," 329
Thrapple, 147
Throte-bolle, 147
Tiberius Gracchus, 395
Toothache paste, 102
Tooth-picks, 108
Torricelli, 318
Totila, 408
Trade Winds, 347
Training, technical, 25; vocational, 24
Trajan, 406
"Traveller, The Deserted," 356
Trendelenburg position, 83, 327
Triumvirs, 400
Trivium, 305
True and good and beautiful, 341
Tuberculosis, treatment of, 53; a reportable disease, 207
Tubules, Malpighian, 314
Tuscany, 93
Typhus, 237
Tyre, 89

U

Ulcers of the tongue, 103
Universe by accident, 220
Universities, Spanish American, 284
Uterus, dislocation of, 50

V

Valley Forge, 178
Vallisneri, 313
Valsalva, 313
Van Helmont, 319
"Varieties of Religious Experience," 258
Vers de Société, 413
Vesalius, 321
Victor, Pope, 330
Virchow, 192, 230, 244, 310, 312, 349, 360
Virgil, 405
Virginia, 390
Vocational training, 24
Volcanoes, 346
Volsci, 98
Volta, 312

W

Walker, 125
Walsh, 127, 159
Warren, Joseph, 159
"Washington, The True George," 173; humor, 172
Washington's private letters, 166
Wasmann, S. J., Fr., 209
Wasps, 201
Weems, 344
Weldon, 364
Welsh, 127, 158
Welsh, Dr. Thomas, 159
White, Richard Grant, 130
Wife and estate, 22
Wife of Bath, 152
Wilson, Governor Woodrow, 276
Wine, straight, 18
Wives, early American, 391; early Roman, 391; Massachusetts, 390; Roman, 389
Women and public affairs, 419
Women at Salerno, 28
Women, colonial, 384; educated, 27; pioneer, 385
"Women of the Cæsars," 383; of Rome, 384

Women professors of medicine, 331
Women's Hospital in New York, 238
Women, triumvirs and, 400
Wood, 58
Wood-pulp paper, 202
Work and worry, 240
Work makes men, 360

X

Xenophon, 35

Y

Yes, 125
Yes, sir, 126
Yperman, 321

16

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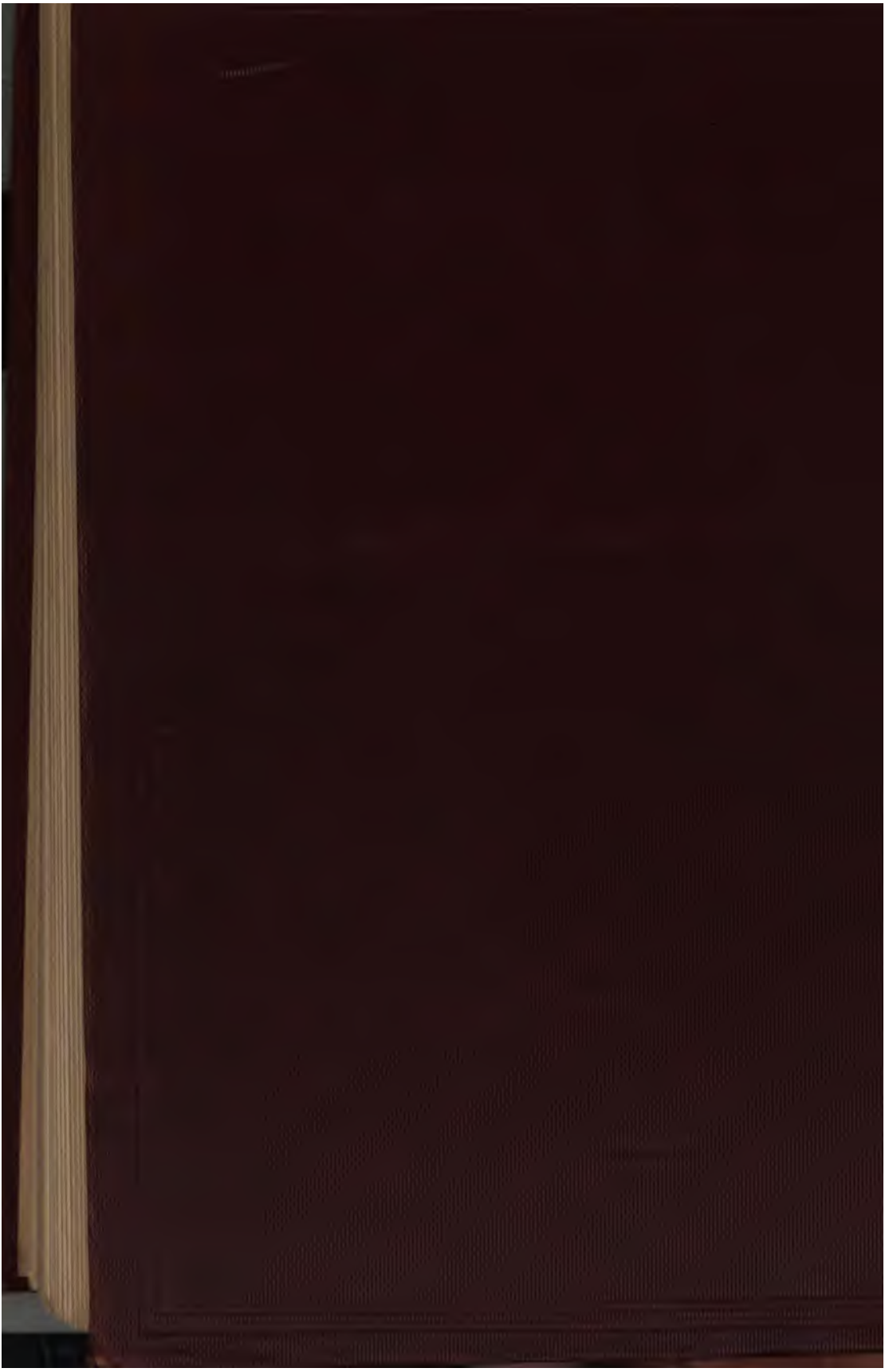
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